OLIVETTI UNDERWOOD
UNDERWOOD 700 / 702
ELECTRIC TYPEWRITERS
TECHNICAL MANUAL

OLIVETTI UNDERWOOD
UNDERWOOD 700/702
ELECTRIC TYPEWRITERS
TECHNICAL MANUAL TA-E7-S1

This manual covers only the features of the Models 700 and 702 which differ from those in the Scriptor and Forum Electric Typewriters and is to be used as a supplement to the present Scriptor Service Adjustment Manual #TA - E7.

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This manual is a reprint of the original Technical Manual TA-E7-S1 dated January, 1967. The cover has been redesigned; the contents are the same.

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UNDERWOOD ELECTRIC TYPEWRITERS
MODELS 700 and 702

INTRODUCTION

The Models 700 and 702 are identical in appearance, except that the Model 702 has an interchangeable colored vinyl upholstered Front Panel. The outer covers of both models have been completely restyled, and are unified in construction for symmetry of line, quiet performance and ease of serviceability.

The Model 700 is designed to use a fabric ribbon whereas the Model 702 is equipped to use a carbon ribbon. The Model 702 is also obtainable with an optional duplex feature which permits the use of either a carbon or fabric ribbon.

The Models 700 and 702 encompass many new innovations; the following is a list of some of the more outstanding features from an operational standpoint.

New styling of Key Tops - Rhythmic Repeat Forward Spacing with the Space Bar - Unique Carbon Ribbon insertion and rewind - Half Forward Spacing - Reverse Tabulation with the Tabulator Bar - Back Space Key on right side of Keyboard - Long functional Plastic Aligning Scales - Carriage Return Key on right side of Keyboard - Ribbon Selector Dial adjacent to Impression Control Dial - IT Key (Interchangeable Type Feature) Model 702.

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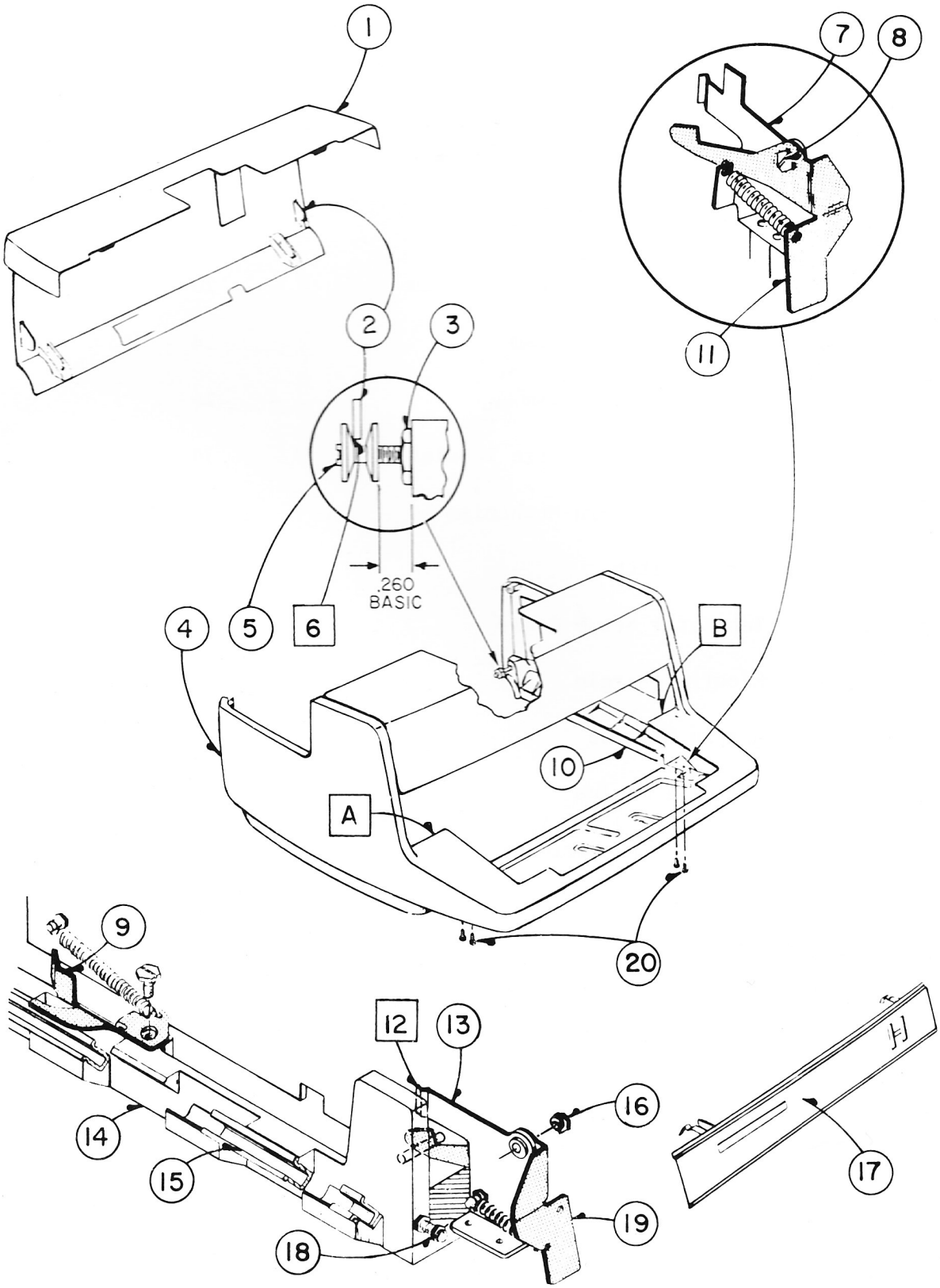

FRONT HOUSING: Model 700

REMOVAL: Release Front Housing latches (19) and (11) located under the Keyboard. Pull the Front Housing (4) forward until it stops against the Safety Latch (9). Push the Front Housing (4) back about 1/8 of an inch. Slide the middle finger of your left hand inside the lower left rear edge of the Front Housing as at (4) until you contact the Front Housing Stop (9), located on the Frame Base (14). Push the Front Housing Stop (9) to the right and remove the Front Housing (4) by sliding it fully forward.

INSTALLATION: Hold the Front Housing (4) in position and insert the Front Housing Guide Rails (10), left and right, in their respective Inner Guide Rails (15). Slide the Front Housing (4) fully rearward until latched securely.

TO ADJUST: When the Front Housing (4) is latched in home position sections (A) and (B) must clear the Name Plate Panel (17) by .015 $\pm$ .005. Adjust the Cushion Stop Screws (18), left and right, located in front of the Frame Base (14).

There must be no back and forth or side movement of the Front Housing (14) when it is latched. To remove back and forth movement, adjust Latch Bracket Eccentrics, left (16) and right (8), as required. To remove side movement, loosen Screws (20) and rotate Brackets (7) and (13) to attain .000 to .010 clearance to the Frame Base as at (12).

The Front Housing Rear Support Screws (5), left and right, must be adjusted so that the inner tapered flange (6) lightly contacts the Rear Cover protrusions (2) as at (6). To adjust, loosen Nuts (3), left and right and adjust the Front Housing Rear Support Screws (5) left and right, as required. Tighten the Nuts (3), left and right.

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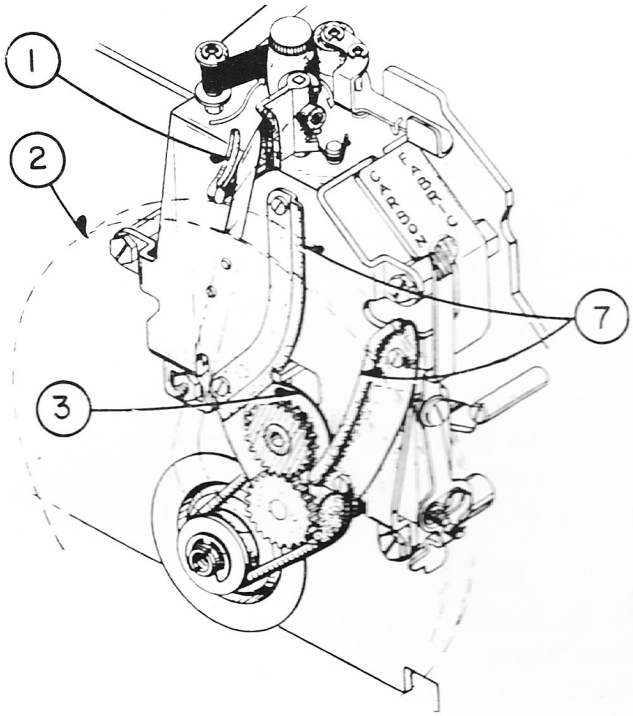

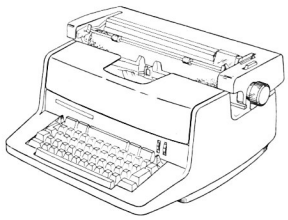

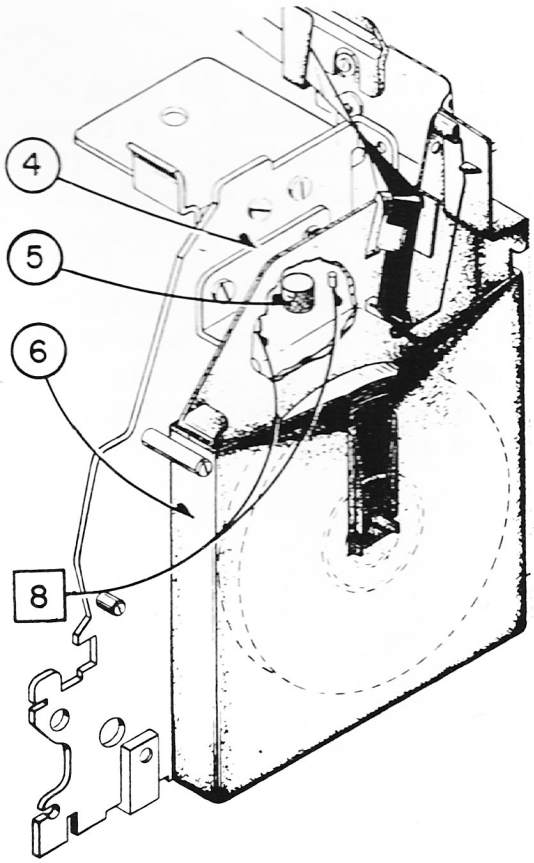

FRONT HOUSING: Model 702

NOTE: On the Model 702, it is necessary to remove the Carbon Ribbon Container Case (6) and the Carbon Ribbon Rewind Spool (2) to facilitate the removal of the Front Housing.

REMOVAL: Release the Front Housing Latches and pull the Front Housing forward until it is stopped by the Front Housing Stop. (Refer to page 2, paragraph 1) Do not release the Front Housing Stop until the following steps have been completed.

1. Move the carriage to the extreme left position.
2. Remove Carbon Ribbon Container Case Fastening Screw (5).
3. Lift Carbon Ribbon Container Case (6) straight up and remove from the machine.
4. Rotate the left Carbon Ribbon Guide (1) towards the front of the machine.
5. Lift the Carbon Ribbon Rewind Spool (2) up, and remove from the machine.

Push the Front Housing to the rear about 1/8 of an inch, and release the Front Housing Stop. Remove the Front Housing by sliding it fully forward. (Refer to page 2, paragraph 1)

INSTALLATION: Hold the Front Housing in position and insert the Front Housing Guide Rails into their respective Inner Guide Rails. (Refer to page 2, paragraph 2) Slide the Front Housing to the rear just far enough for the Front Housing Stop to move into its holding position.

Complete the following steps:

1. Place Flange (3) of the Carbon Ribbon Rewind Spool (2) into Plastic Guide Tracks (7) and allow it to drop into position.
2. Rotate the left Carbon Ribbon Guide (1) into operating position as shown.
3. Move carriage to extreme left position.
4. Place guides of Carbon Ribbon Container Case (6) in line with the outer edges of the Carbon Ribbon Case Mounting Bracket (4) and lower into position.
   NOTE: Locating holes in Carbon Ribbon Container Case (6) must fully engage over Locating Studs in Mounting Bracket (4) as at (8).
5. Install Carbon Ribbon Container Case Fastening Screw (5).
6. Slide Front Housing fully rearward until latched securely.

TO ADJUST: Refer to Front Housing adjustments for the Model 700 on page 2.

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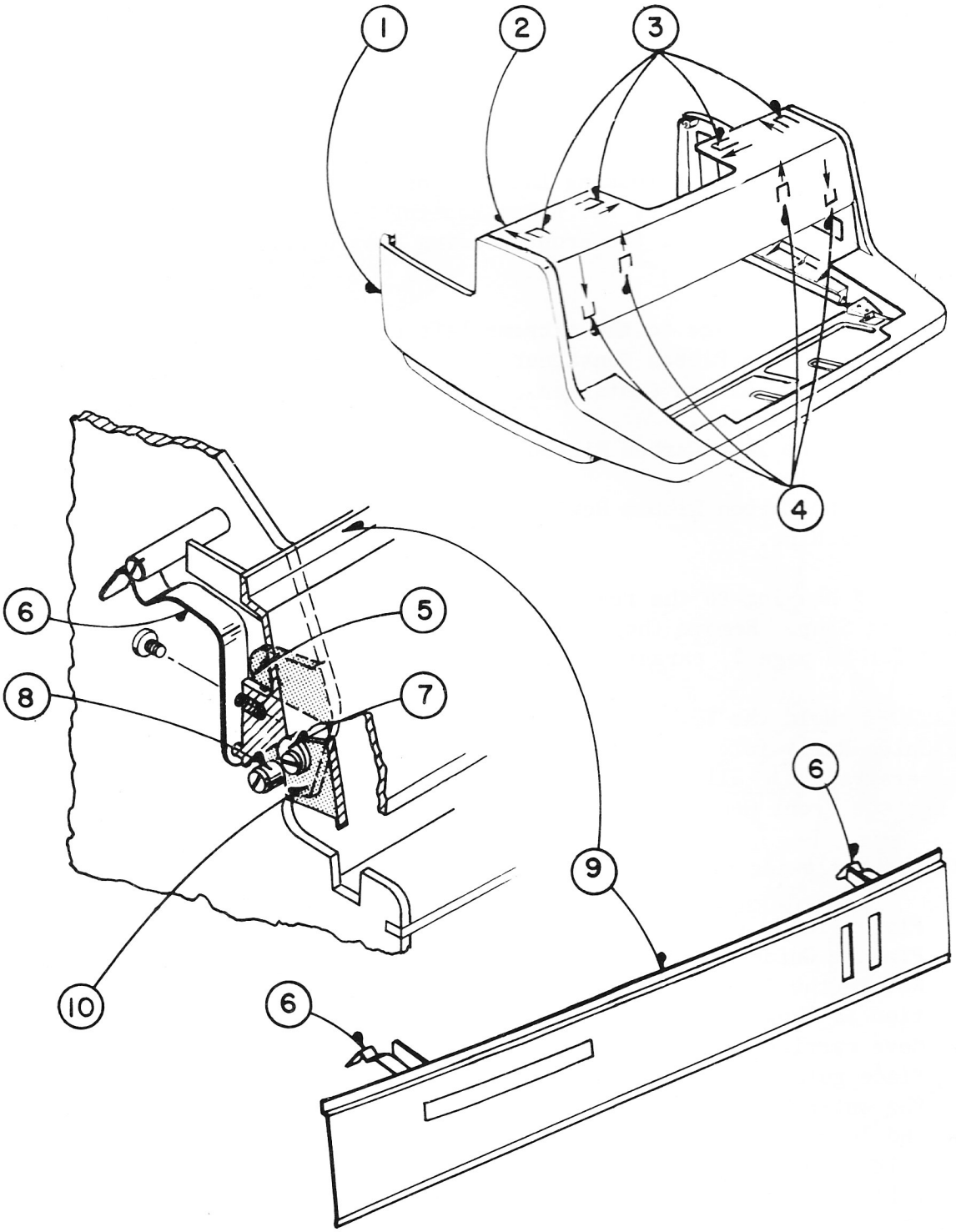

FRONT PANEL: Model 702

REMOVAL: Remove the Front Housing (1) from the machine.

NOTE: The Front Panel Outer Vinyl Cover (2) is fastened to the Front Housing (1) by eight Tabs. The upper Tabs (3) and lower Tabs (4) are formed over flat as indicated by the arrows.

To remove the Front Panel Outer Vinyl Cover (2), straighten all Tabs, and lift the Front Panel Outer Vinyl Cover (2) from the Front Housing (1).

INSTALLATION: Position the Front Panel Outer Vinyl Cover (2) on the Front Housing (1), making sure that all Tabs fully enter their respective slots in the Front Housing (1). Form all Tabs (3) and (4) as shown in the drawing.

NAME PLATE PANEL:

REMOVAL: Pull the top edge of the Name Plate Panel (9) forward and lift from the machine.

NOTE: The extension (5) on the left end of the Name Plate Panel (9) retains the Impression Control Cam Shaft.

INSTALLATION: Check that the Impression Control Cam Shaft is fully towards the right. Position the recesses of the Name Plate Panel extensions, left and right, over their respective Pivot Studs (8). Slightly depress the Detent Clips (6), while pushing rearward on the Name Plate Panel (9).

TO ADJUST: The clearance between the top of the Name Plate Panel (9) and the bottom of the Front Panel (2) should be .050 on Model 702 and .075 on Model 700. Adjust Eccentric Washers (7) left and right, as required.

The left and right ends of the Name Plate Panel (9) must not contact the Front Housing (1), and the end play should not exceed .008 $\pm$ .005.
Adjust by slightly forming the extension (10), left and right as required.

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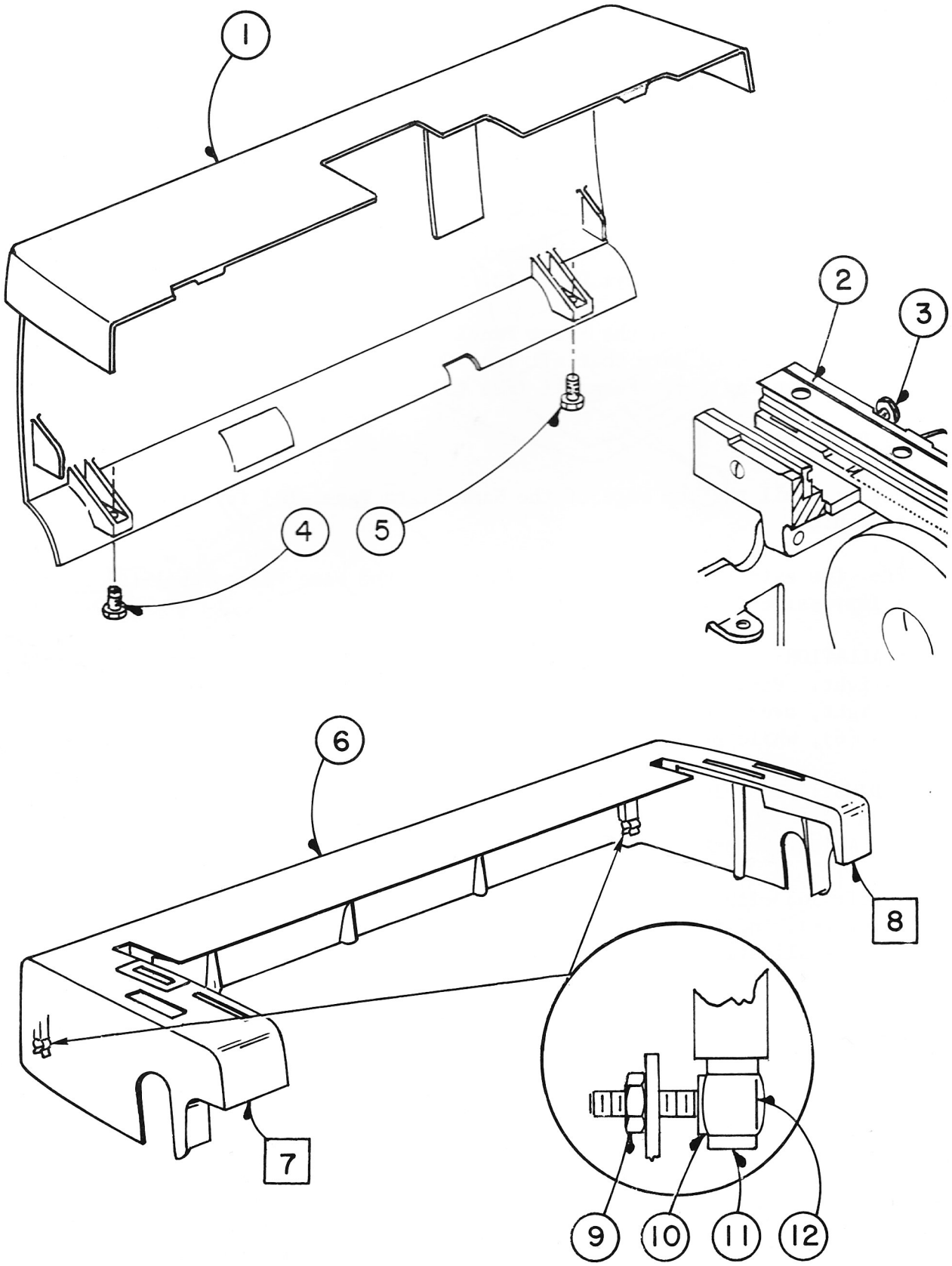


REAR COVER:

REMOVAL: Remove the two Rear Cover Screws (4) and (5) located under the machine and remove the Rear Cover (1).

INSTALLATION: The Front Housing should be latched in place before installing the Rear Cover (1). Hold the Rear Cover (1) in position while placing the machine on its left side. Install the Rear Cover Screws (4) and (5) but do not tighten. Place the machine on its back and tighten the Screws (4) and (5). The back of the Rear Cover (1) must align with the contour of the Front Housing. Adjust Cushion Stop Screws (3) left and right, located in the Fixed Rail assembly (2), as required.

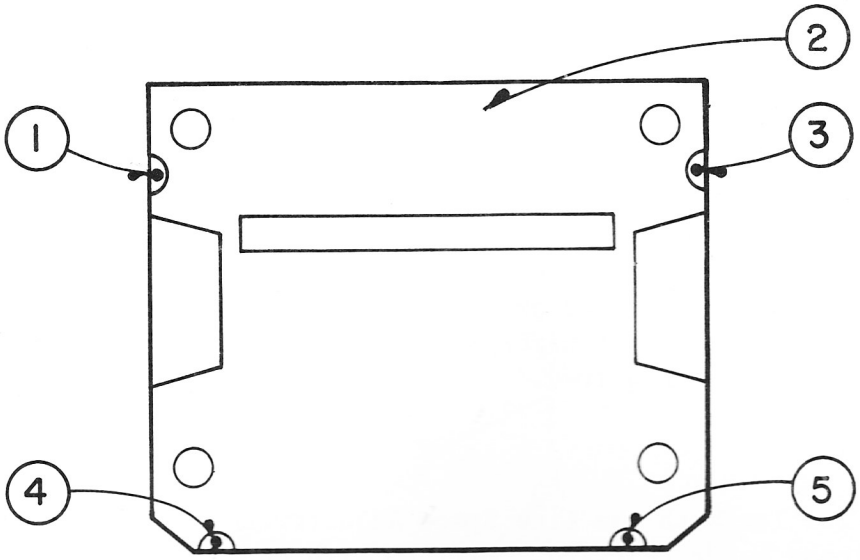
CARRIAGE COVER:

REMOVAL: Position both the Line Space Adjuster Lever and the Line Space Ratchet Release Lever rearward. Lift up with equal pressure on the forward ends of the Carriage Cover as at (7) and (8). With the Carriage Cover fully open, push rearward on the Cover and remove it from the Pivot Studs (10), left and right.

INSTALLATION: Position the Carriage Cover (6) so the Rear Pivot Spring Clips (11), left and right are in line with their respective Pivot Studs (10). Snap the Cover into position. Lower the Carriage Cover (6) into the locked position by applying equal pressure on the front ends (7) and (8) of the Carriage Cover. Re-set the Line Space Adjuster Lever and the Ratchet Release Lever.

TO ADJUST: The Carriage Cover (6), must be laterally positioned to centralize the Control Levers in their respective slots. Reposition the Rear Pivot Studs (10), left and right, as required. In order to control the end play of the Carriage Cover (6), the Lips (12) of the rear Pivot Spring Clips (11) must limit against the ends of the Pivot Studs (10). Loosen the Nuts (9) and adjust the Pivot Studs (10), as required. Tighten both Nuts (9).

BASE COVER PAD:

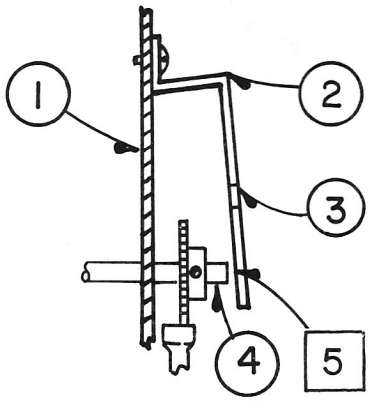


REMOVAL: Place the machine on its back and remove the upper Screws (1) and (3) from the Base Cover Pad (2). Loosen the lower Screws (4) and (5) and lift the Base Cover Pad from the machine.

INSTALLATION: Install in the reverse order of removal.

CARBON RIBBON CASE MOUNTING BRACKET ASSEMBLY:

The Carbon Ribbon Case Mounting Bracket (3) should be set at a 5 degree angle to the Side Plate (1) of the Machine and should safely clear the right end of the Ribbon Driving Shaft (4) when the Shaft is detented to the right as at (5).



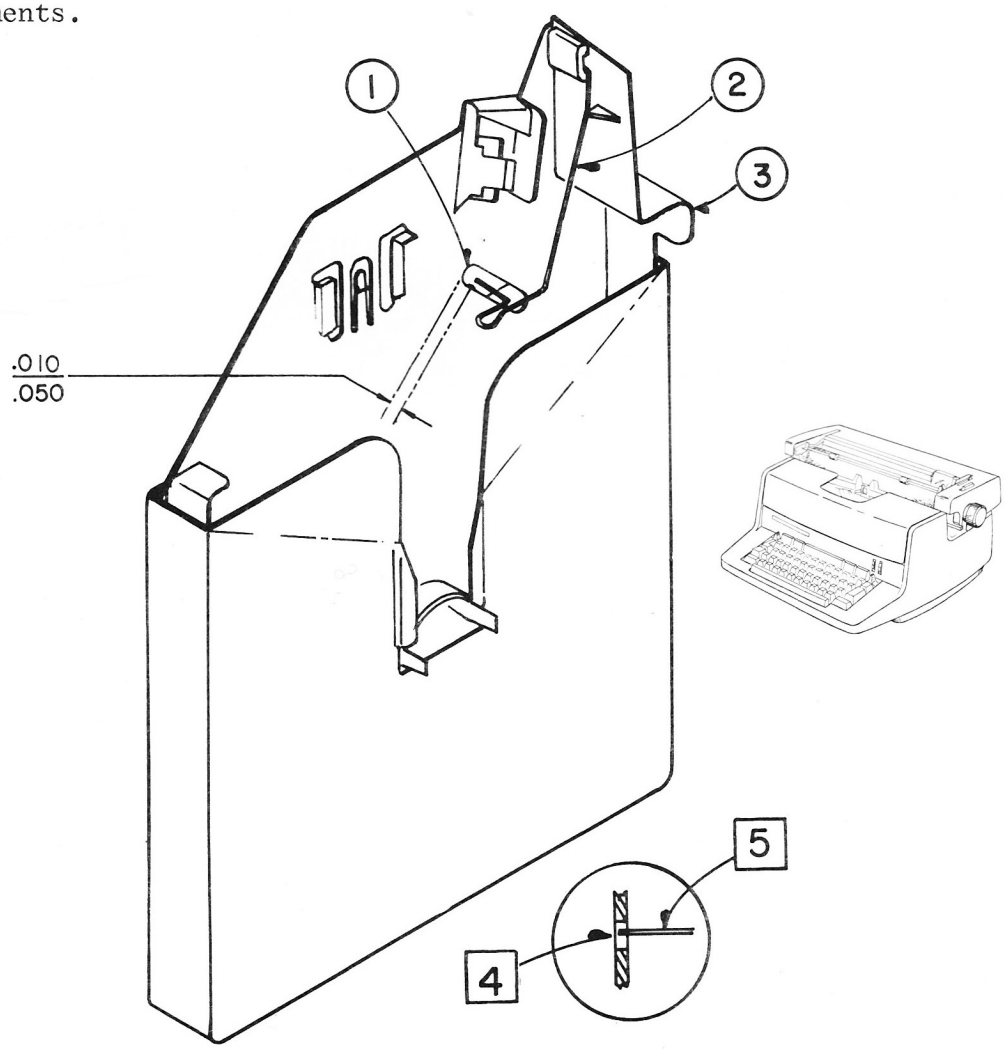
TO ADJUST: Form the Carbon Ribbon Case Mounting Bracket at (2).

CARBON RIBBON RECOIL SPRING:

The Ribbon Recoil Spring (2) should be positioned in respect to the Slot (1) of the Carbon Ribbon Container Insert (3) in the following manner:

1. The forward end of Ribbon Recoil Spring (2) must be horizontal as at (5).
2. The Ribbon Recoil Spring (2) must fully engage the Slot (1) as at (4) without protruding through the opposite side.
3. The Ribbon Recoil Spring (2) must be centered in the Slot (1) as at (4).
4. The Ribbon Recoil Spring (2) must clear the front end of the Slot (1) between .010 to .050 as at (1).

TO ADJUST: Form the Carbon Ribbon Recoil Spring (2) to meet the above requirements.



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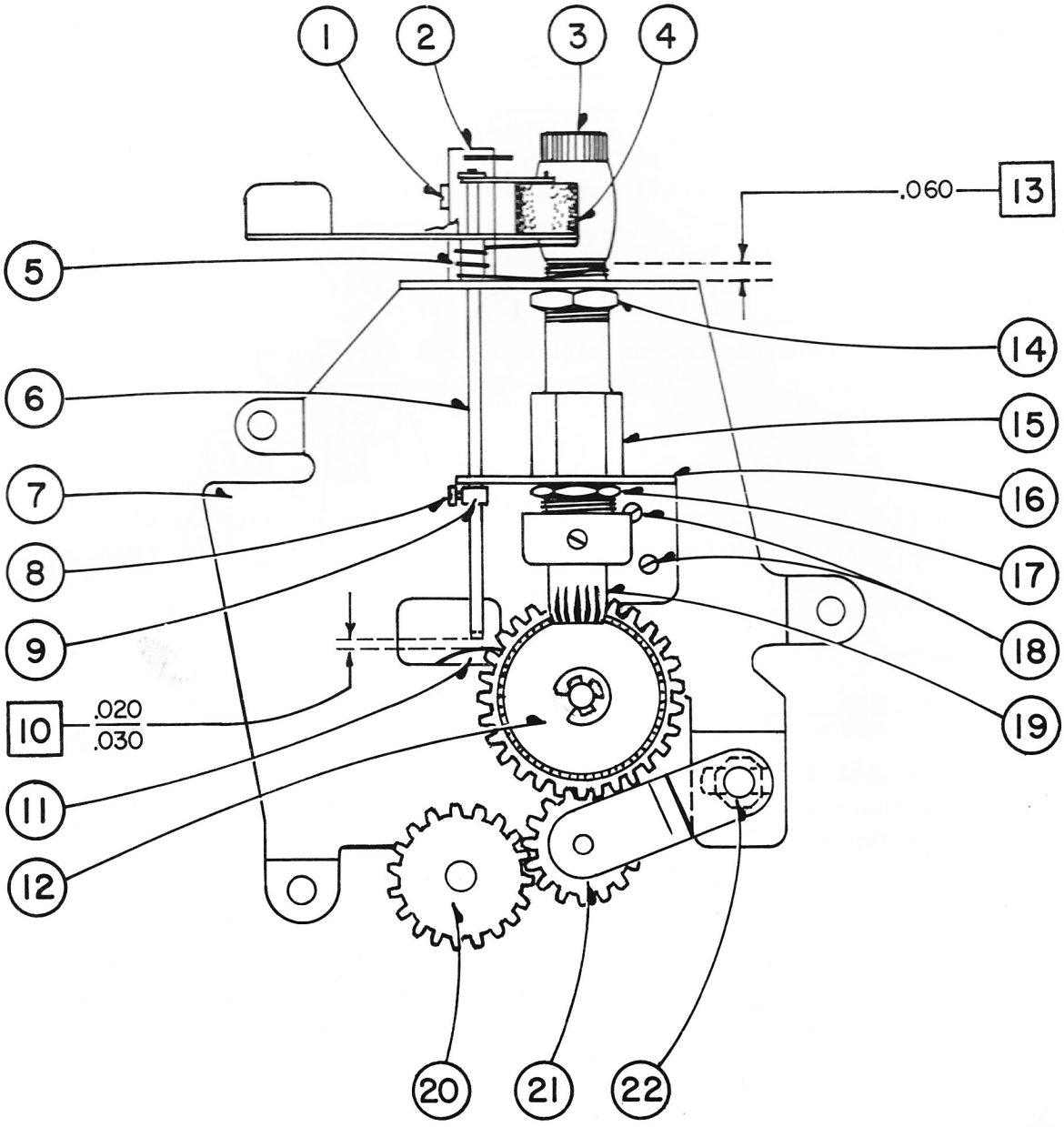

CARBON RIBBON REWIND MOUNTING BRACKET ASSEMBLY:

The Ribbon Feed Bearing (15) must be adjusted so that the top treaded portion extends .060 above the Carbon Ribbon Rewind Mounting Bracket (7) as at (13).

TO ADJUST: Loosen Lock Nuts (14) and (17), Screws (18) and Screw (8) in Collar (9). Turn Ribbon Feed Bearing (15) to obtain the .060 at (13). Then tighten Lock Nut (14), Lock Nut (17) and Screws (18). Temporarily reset Collar (9) on Ribbon Spool Retaining Rod (6).

CARBON RIBBON FEED ROLL:

The Carbon Ribbon Feed Roll Assembly (3) must be free with .005 to .010 up and down play.

TO ADJUST: Loosen the Set Screw in Carbon Ribbon Driving Gear (19) and raise or lower the Gear (19) as required. Tighten the Set Screw.

RIBBON SPOOL RETAINING ROD:

The Ribbon Spool Retaining Rod (6) must position over the Carbon Ribbon Rewind Disc Flange (11) with a clearance of .020 to .030 as at (10).

TO ADJUST: Loosen the Set Screws (1) and (8). Position the Retaining Rod (6) so the bottom portion clears the Carbon Ribbon Rewind Disc Flange (11) between .020 to .030 as at (10). Position the Collar (9) against the Bracket (16) and tighten the Set Screw (8).

The Ribbon Spool Retaining Rod (6) must be free with .010 to .020 up and down play.

TO ADJUST: Hold the Retaining Rod (6) so the Collar (9) is against the Bracket (16). Position the Carbon Ribbon Guide (2) within .010 to .020 from the top of the Carbon Ribbon Rewind Mounting Bracket (7) and tighten Set Screw (1).

RIBBON IDLER GEAR:

The teeth of the Ribbon Idler Gear (21) must mesh as deeply as possible without binding in Gears (12) and (20).

TO ADJUST: Loosen the Idler Gear Bracket Lock Nut (22) and adjust the Idler Gear (21) as required. Carefully tighten the Lock Nut (22).

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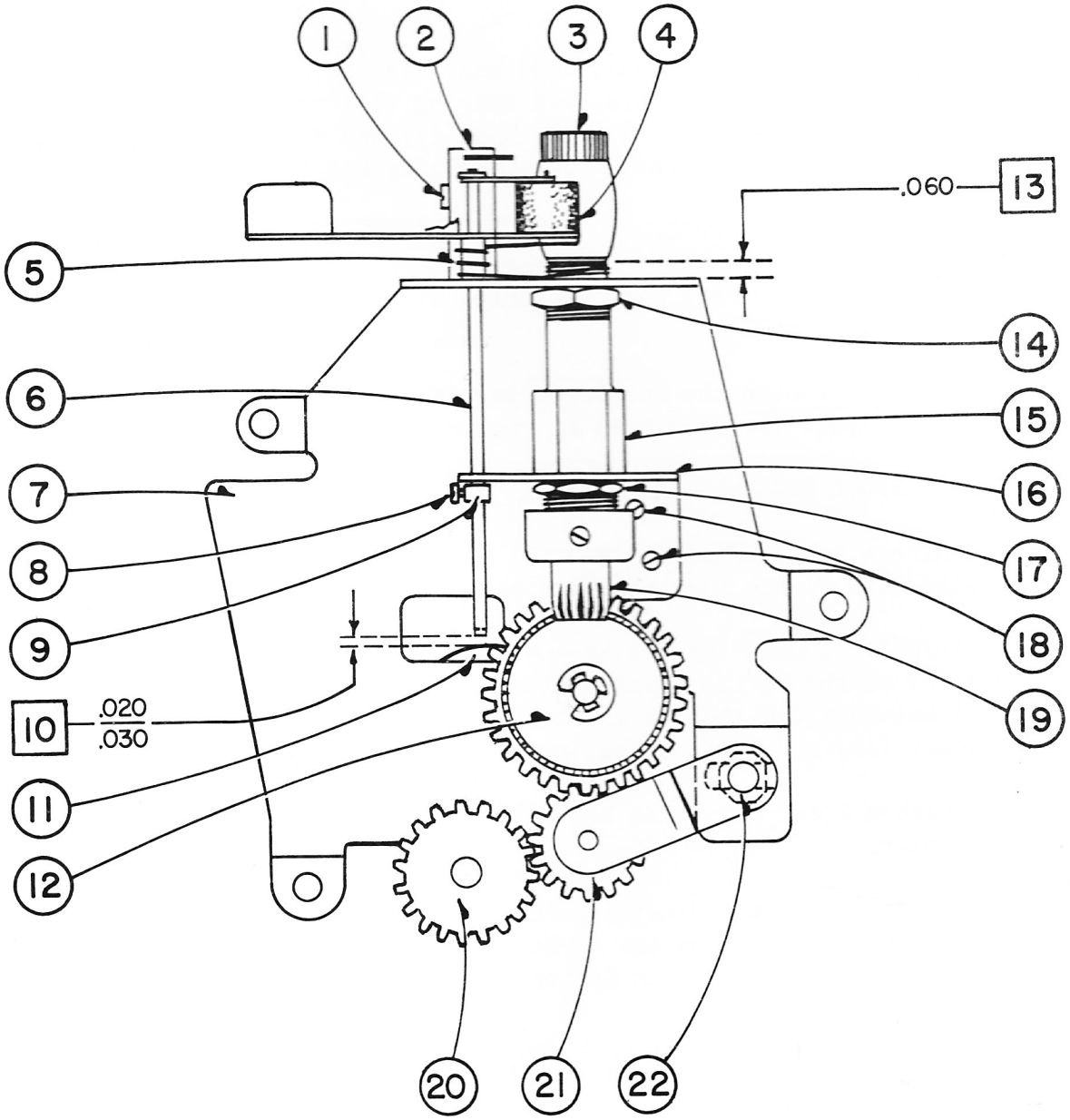

CARBON RIBBON PRESSURE ROLL:

The Carbon Ribbon Pressure Roll (4) must turn freely under the pressure of Spring (5).

TO ADJUST: Remove the Pressure Roll (4) and lightly lubricate the bearing surface. Rubber must be kept free of lubrication.

The Carbon Ribbon Pressure Roll (4) must maintain sufficient pressure to ensure positive feed of the Carbon Ribbon without slippage.

TO ADJUST: Form upper arm of the Carbon Ribbon Pressure Roll Tension Spring (5) as required.

NOTE: Before altering Pressure Roll tension check condition of the Carbon Ribbon Magnetic Rewind Clutch Assembly for excessive force. Surfaces of both the Magnetic Rewind Pulley and Bearing Disc should be wiped clean with a dry cloth. Do not lubricate.

CARBON RIBBON FEED PINION:

The Carbon Ribbon Feed Pinion (20) varies in size according to the Pitch of the typewriter. This is necessary in order to advance the Carbon Ribbon the required distance on each keystroke.

Name	Part No.
Ribbon Feed Pinion - 12 & 16 Pitch (Natural - 20 Teeth)	51R907
Ribbon Feed Pinion - 10 Pitch (Red - 22 Teeth)	51R908

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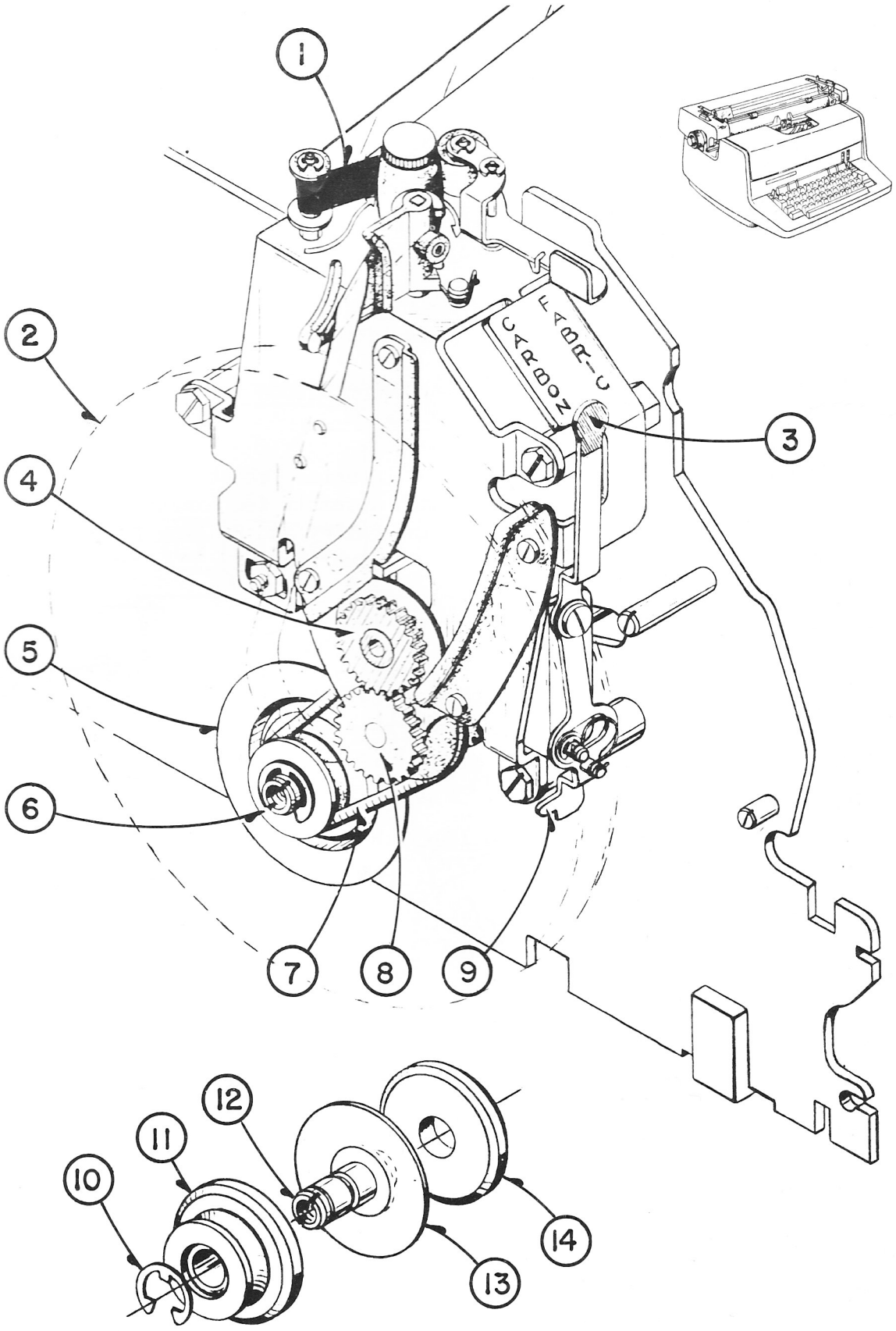

CARBON RIBBON MAGNETIC REWIND MECHANISM

FOREWORD: The power to drive the Carbon Ribbon Rewind Mechanism is derived from the Action Drive Shaft Pulley (5). As the Action Drive Shaft Pulley (5) rotates, it causes the Carbon Ribbon Magnetic Rewind Drive Belt, (7) to turn thru the action of the Magnetic Slip Clutch Assembly (6). The Carbon Ribbon Magnetic Rewind Drive Belt (7) will in turn drive the Carbon Ribbon Rewind Drive Gear (8), Rewind Disc Gear (4) and Carbon Ribbon Rewind Disc (2). When the slack in the Carbon Ribbon (1) is completely taken up, the Magnetic Rewind Pulley (11) will automatically start to slip.

REMOVAL OF CARBON RIBBON MAGNETIC REWIND CLUTCH ASSEMBLY:

1. Disconnect the Carbon Ribbon Magnetic Rewind Drive Belt (7) from the Magnetic Rewind Pulley (11).
2. Remove Retaining Ring (10).
3. Remove Magnetic Rewind Pulley (11) from Magnetic Rewind Pulley Hub (12).
4. Remove Magnetic Rewind Pulley Bearing Disc (13) from Magnetic Rewind Pulley Hub (12).
5. Unscrew Magnetic Rewind Pulley Hub (12).
6. Remove Magnetic Rewind Magnet (14).

INSTALLATION OF CARBON RIBBON MAGNETIC REWIND CLUTCH ASSEMBLY:

1. Place Magnetic Rewind Magnet (14) in Action Drive Shaft Pulley (5).
   NOTE: "DOT" on Magnet must face the Action Drive Shaft Pulley (5).
2. Screw Magnetic Rewind Pulley Hub (12) securely into place.
3. Place Magnetic Rewind Pulley Bearing Disc (13) over flange of Magnetic Rewind Pulley Hub (12).
4. Place Carbon Ribbon Magnetic Rewind Pulley (11) on Magnetic Rewind Pulley Hub (12).
5. Install Retaining Ring (10).
6. Connect Carbon Ribbon Magnetic Rewind Drive Belt (7) to the Magnetic Rewind Pulley (11).

CAUTION: No lubrication should be applied to the Magnetic Clutch Assembly. The Bushing of the Carbon Ribbon Magnetic Rewind Pulley is made of a Delrin plastic material and is impregnated with a dry lubricant.

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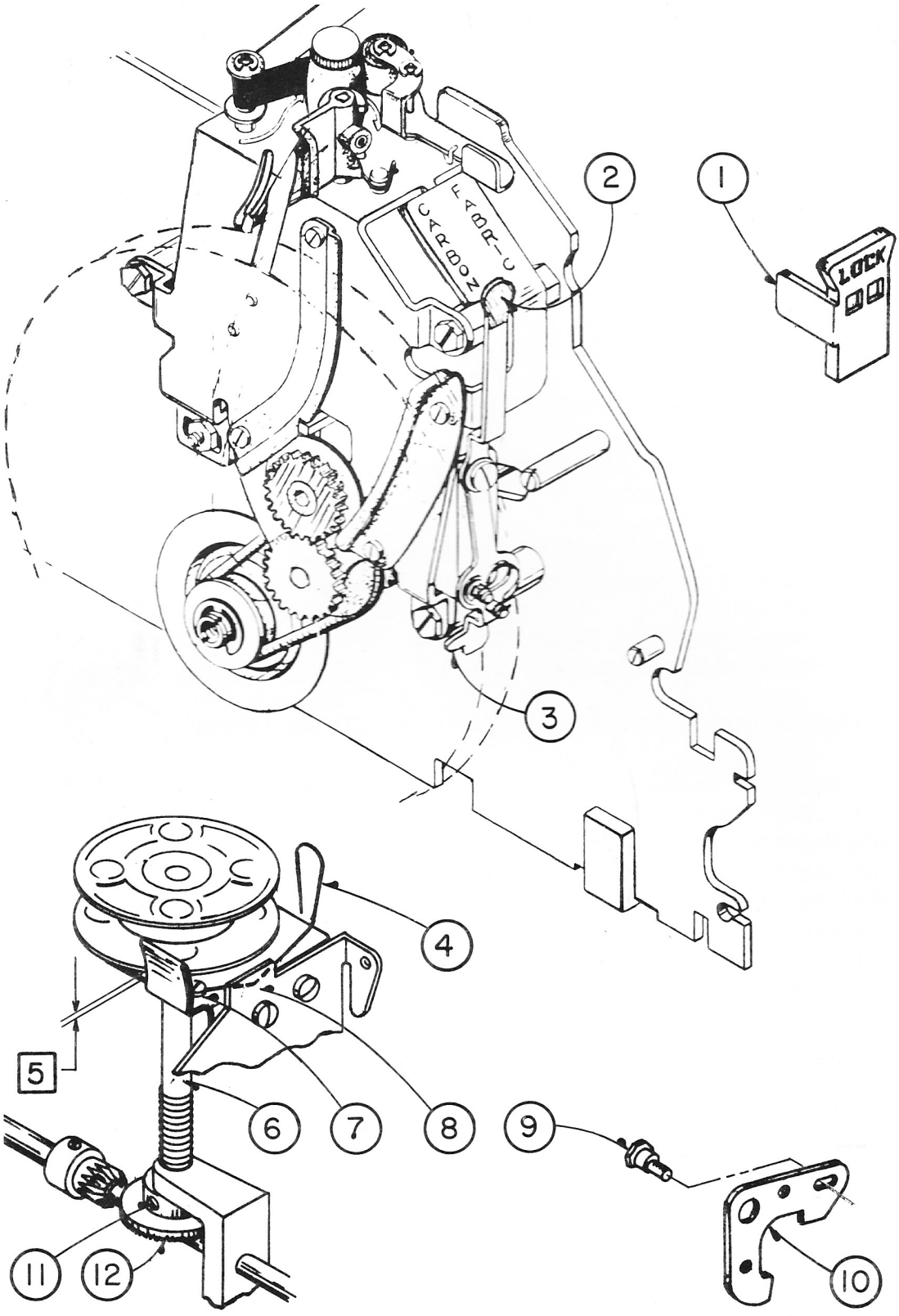

CARBON RIBBON REWIND DISC STOP:

When the typewriter is being used with a Carbon Ribbon, the Carbon Ribbon Rewind Disc Stop Lever (2) must be positioned to the "LEFT". When in this position, the Red portion of the Lever (2) will be in line with the word "CARBON".

NOTE: A red plastic Lever Lock (1) fits over the upper portion of the Lever (2). When the Lever Lock (1) is in place it prevents accidental movement of the Lever (2) into the Fabric position.

When the typewriter is to be used with a Fabric Ribbon, the Lever Lock (1) must be removed, and the Carbon Ribbon Rewind Disc Stop Lever (2) should be positioned to the "RIGHT". When in this position, the Red portion of the Lever (2) will be in line with the word "FABRIC", while the lower extension (3) of the Lever intercepts the Carbon Ribbon Rewind Disc, preventing the Disc from turning.

FABRIC RIBBON RECOIL SPRING:

The Fabric Ribbon Recoil Springs (4), left and right, are designed to allow the ribbon to rise without becoming taut. The Recoil Springs (4), left and right, must rest flush on the flat surface of the Ribbon Spool Bracket and the angled portion must contact The Side Plate as at (8).

TO ADJUST: Loosen Screw (7) to position Recoil Spring against the Side Plate. Form the Recoil Spring for flush contact to the Ribbon Spool Bracket.
NOTE: Looped end of the Recoil Spring should clear the Aligning Scale Guide between .030 to .070".

RIBBON SPOOL SHAFT GEAR:

The Ribbon Spool Shaft (6), left and right, must have .020 to .025 up and down movement as at (5).

TO ADJUST: Loosen Screw (11) and position Gear (12) up or down on the Shaft (6). Tighten Screw (11).

RIBBON VIBRATOR ARM:

The Ribbon Vibrator Arm (10) on both the Models 700 and 702 is equipped with a Ribbon Vibrator Arm Screw (9) that has an eccentric shoulder. In addition to the lateral adjustment of the Screw (9) to control Black Ribbon lift, it can also be turned to provide greater adjustment range and for smooth engagement of the Ribbon Shift Link.

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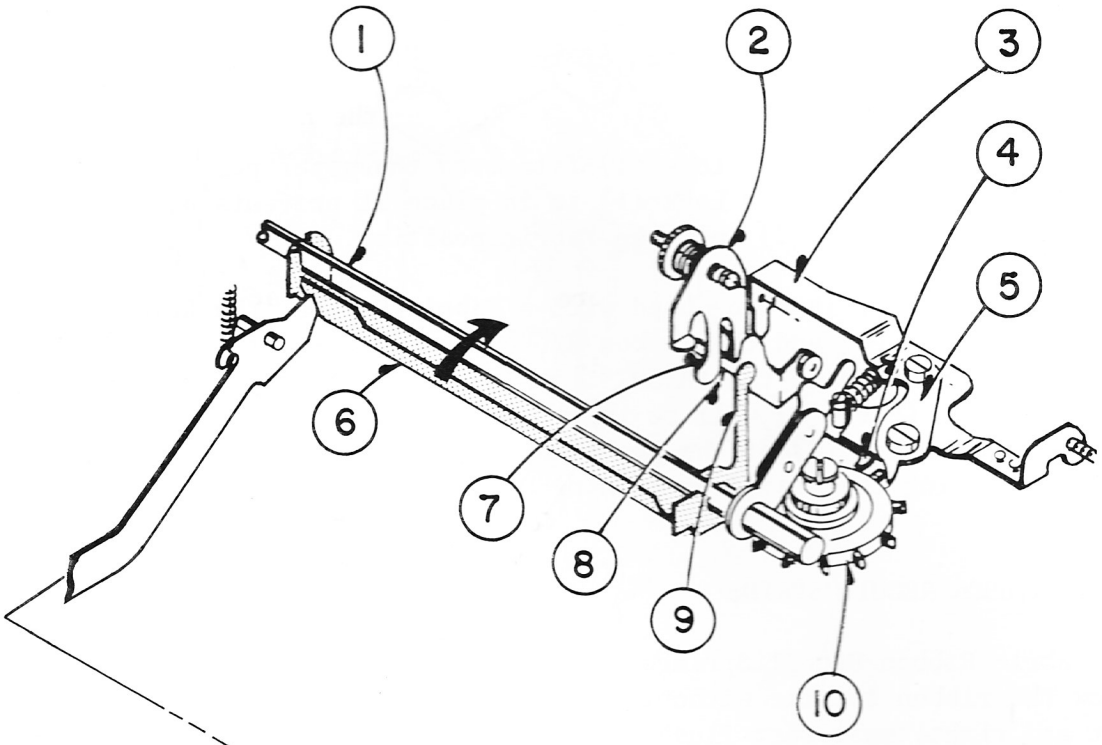
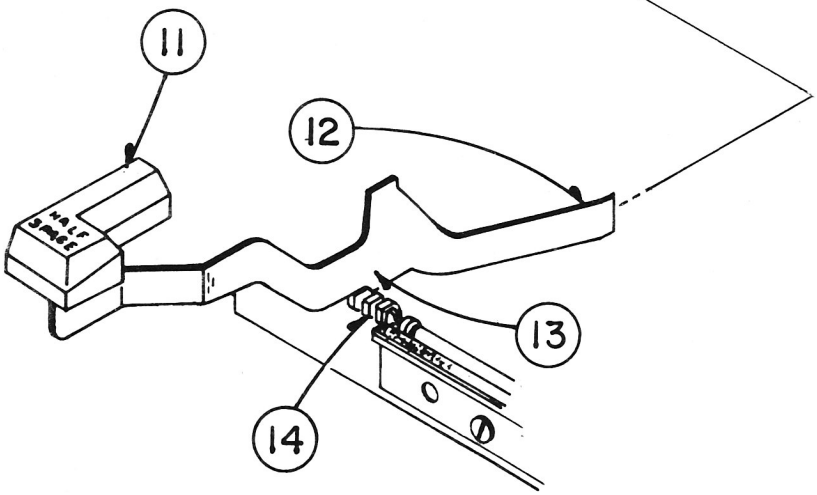




HALF FORWARD SPACE MECHANISM:

FOREWORD: When the Half Forward Space Key (11) is held depressed, the half space mechanism allows the Carriage to move a half space to the left. The Carriage will remain in this position as long as the Key is held depressed. When the Half Space Key (11) is released, the Carriage will move the remaining half space.

This feature conveniently facilitates the replacement of one word with another which contains either one more or one less character.

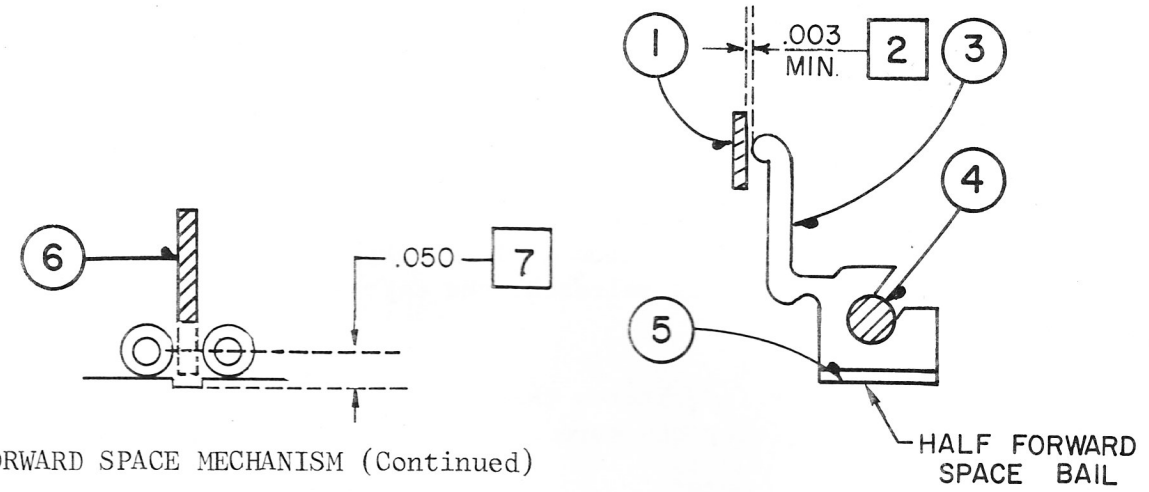
At rest position, the Escapement Body (3) is held against the forward leg of the Escapement Body Stop (2) as at (7) and the Fixed Dog (4) is holding the Escapement Wheel (10) preventing the Carriage from moving.

COMMAND: When the Half Forward Space Key (11) is depressed, its lower extension (13) enters between the Key Lever Interlock Rolls (14) preventing the following five operations from occuring:

1. Carriage Return
2. Tabulation
3. Tabulation Set
4. Back Space
5. Space Bar (Repeat Position Only)

As the Half Forward Space Key (11) is depressed, the rear portion of the Lever (12) causes the Half Forward Space Bail (6) to rotate in the direction of the arrow. The Half Forward Space Bail Arm (9) contacts the Escapement Body (3) below the pivot point, causing the Escapement Body (3) to rotate the Fixed Dog (4) below the Escapement Wheel (10). The Intermediate Dog (5) will be in position to intercept the next Escapement Wheel Tooth, thus stopping the Carriage exactly on the half space.

When the Half Space Key (11) is released, the Escapement Body Return Spring (8) will restore the Fixed Dog (4) back in the path of the Tooth that the Intermediate Dog (5) was holding, allowing the Carriage to move the remaining half space.



HALF FORWARD SPACE MECHANISM (Continued)

ADJUSTMENTS

SPACE BAR TRIP SHAFT:

The Space Bar Trip Shaft (4) must be free between its Pivot Screws with no end play. Adjust the Pivot Screws as required.

HALF FORWARD SPACE BAIL:

At rest position, the Arm (3) of the Half Forward Space Bail must clear the Escapement Body (1) with a minimum of .003 as at (2).

TO ADJUST: Remove the motor from the machine. From the rear of the machine, place a large Twister on each end of the Half Forward Space Bail (5), and with apposing force, form the Half Forward Space Bail (5) as required. Replace motor.

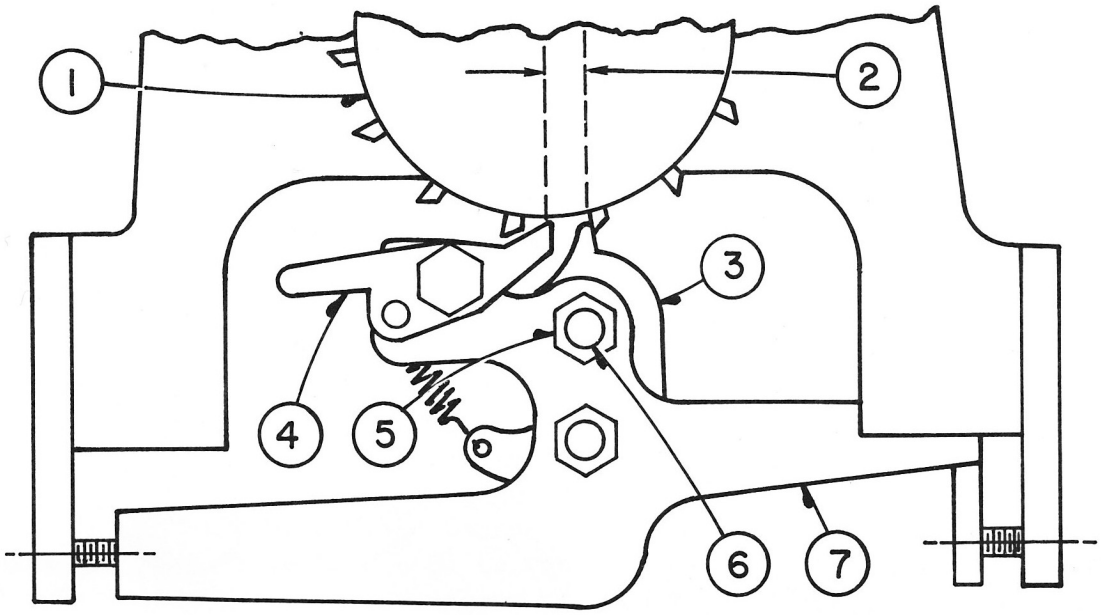
NOTE: At rest position, the Half Forward Space Bail Arm (3) must not interfere with the rest position of the Escapement Body (1).

TO CHECK ADJUSTMENT:

The Escapement Trip must occur when the Half Forward Space Key Lever (6) has been depressed to a minimum of .050 above the bottom of the slot in the Key Lever Down Stop Bar as at (7). If the Half Forward Space Key Lever (6) is depressed during Carriage Return or a Feature Key operation, the Intermediate Dog must not interfere with the Escapement Wheel. If necessary, re-check the latter adjustment.

LUBRICATION:

Molykote should be applied to the fulcrum points of the Half Forward Space Bail and to the rear portion of the Half Forward Space Key Lever where it engages the Half Forward Space Bail.



HALF FORWARD SPACE MECHANISM (Continued)

ADJUSTMENTS

INTERMEDIATE DOG:

The Intermediate Dog (3) has been modified so its lateral movement can be adjusted to obtain a half space movement of the Carriage when the Half Forward Space Key Lever is held depressed.

The Drop (2) between the Intermediate Dog (3) and the Fixed Dog (4) differs according to the pitch of the machine and should be set as follows:

Pitch	Drop	Nearest Fraction of an Inch
10	.107	7/64" = .1093
12 & 16	.090	3/32" = .0937
6	.186	3/16" = .1875

TO ADJUST: Remove the Escapement Body (7) from the machine. Loosen the Lock Nut (5) and adjust the Eccentric Shoulder Screw (6) while applying pressure against the Intermediate Dog (3) at (3).

Check for the proper Drop (2) at the tip of the Dogs. Prevent the Eccentric Shoulder Screw (6) from turning while tightening the Lock Nut (5). The Intermediate Dog (3) must be free after the adjustment has been made. Install the Escapement Body (7) in the machine and reset the Escapement Trip adjustment.

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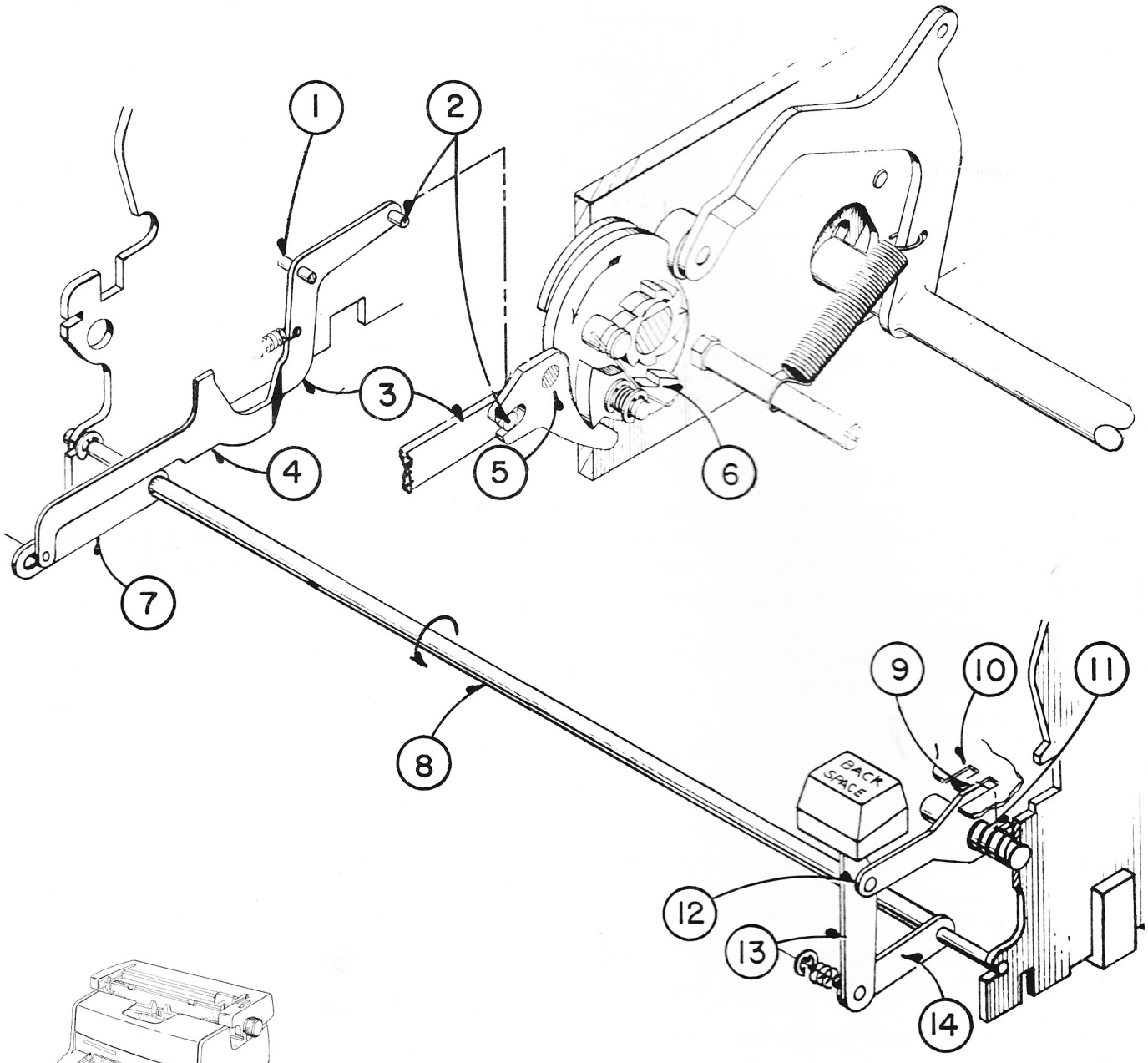

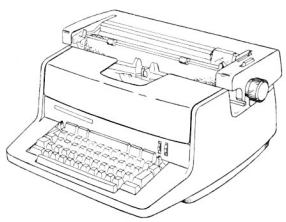

BACK SPACE MECHANISM

FOREWORD: The basic operation of the Back Space mechanism has not been changed from that of the Scriptor. However, the Back Space Key Lever (13) has been located on the upper right side of the Keyboard and the Back Space Connecting Shaft (8) transmits the movement to the Back Space Lever (3) on the left side of the machine.

COMMAND: Depression of the Back Space Key Lever (13) causes the Back Space connecting Shaft (8) to rotate in the direction of the arrow. The Back Space Key Lever Link (12) stabilizes the Back Space Key Lever (13) and maintains it in a vertical position. The Back Space Key Lever Link Compression Spring (11) prevents the Back Space Key Lever Link (12) from vibrating during machine operation. As the Back Space Connecting Shaft Arm (7) rotates downward, it causes the Back Space Lever (3) to rotate about its fulcrum (1). The Stud (2) rotates the Trip Pawl (5) allowing the Ratchet Pawl (6) to engage the Ratchet, thus accomplishing a Back Space operation in the usual manner.

Extension (4) of the Back Space Lever (3) enters between the Key Lever Interlock Rolls, preventing simultaneous operation of the other five Feature Keys.

ADJUSTMENTS

BACK SPACE LEVER:

The Back Space Lever (3) must operate freely in the Key Lever Comb slot and all pivot points of the Back Space Connecting Shaft (8) must be free.

TO ADJUST: Form the Back Space Lever (3) and the Back Space Connecting Shaft Arms (7) and (14) as required. Lubricate all pivot points.

BACK SPACE KEY LEVER LINK:

The Back Space Key Lever Link (12) must operate freely without excessive end play. NOTE: An extra slot has been provided in the top of the Key Lever Comb (10) to provide a means of removing excess play from the Back Space Key Lever Link (12).

TO ADJUST: Form the Prong (9) of the Key Lever Comb (10) to the left or right in order to open or close the Slot for the Back Space Key Lever Link (12).

UNDERWOOD ELECTRIC TYPEWRITERS
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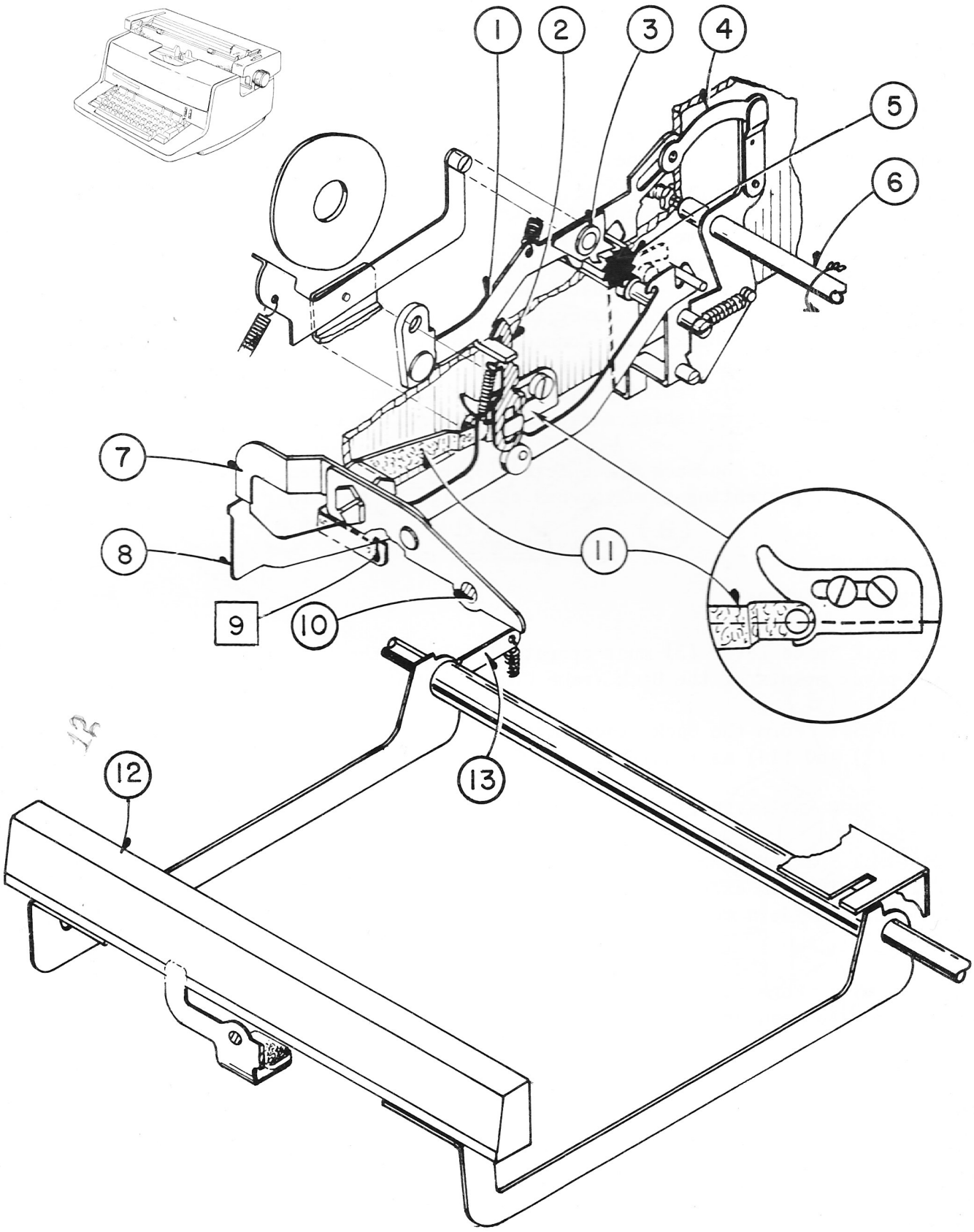

SPACE BAR MECHANISM

FOREWORD: When the Space Bar (12) is depressed in the normal manner, the Carriage will advance one space for each operation of the Space Bar.

When the Space Bar is fully depressed (below the normal position), the Carriage will repeat space rapidly. Also the five Feature Keys will be prevented from being operated through the action of the Key Lever Interlock Bar.

SINGLE SPACE OPERATION:

When the Space Bar (12) is depressed, the rear Extension (13) contacts the Space Bar Action Intermediate Lever (7) which pivots at (10), and lowers the Space Bar Action Lever (8). The Space Bar (12) completes its normal downward travel when the Space Bar Action Lever (8) meets the resistance of the Repeat Space Actuator Lever (11) at (9). The Space Bar Pull Link (1) is lowered by the Key Lever Latch (2) engaging the Pull Link Dog (3) with the Action Drive Shaft (5). As the Action Drive Shaft rotates, the Space Bar Pull Link (1) moves forward causing the Connecting Link (4) to rotate the Space Bar Trip Shaft (6) in the direction of the arrow, and in turn causes the escapement to advance the Carriage in the same manner as in the Scriptor.

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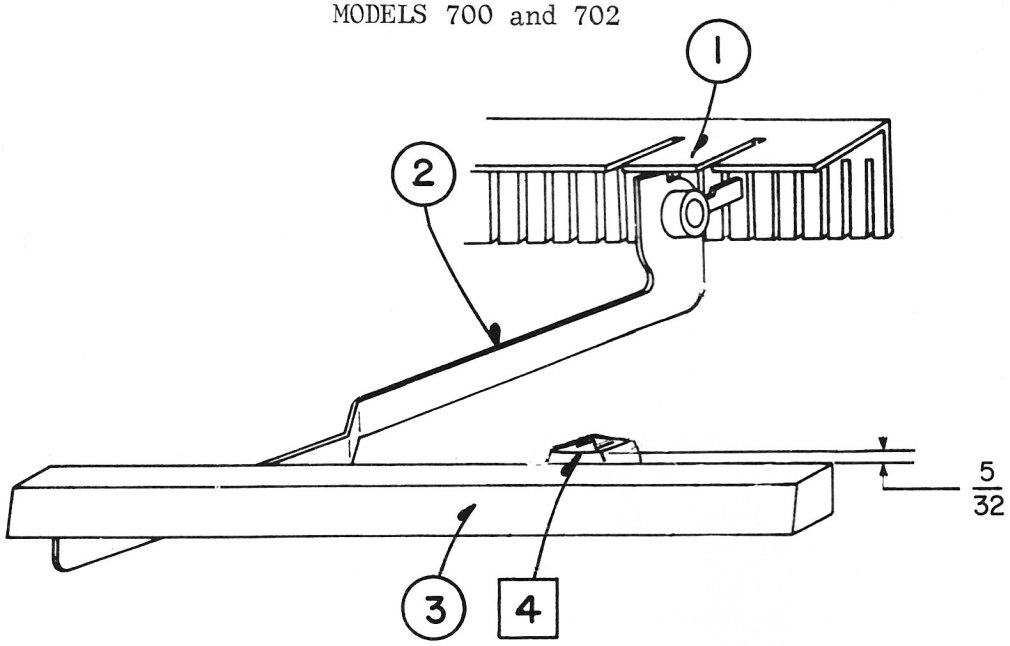

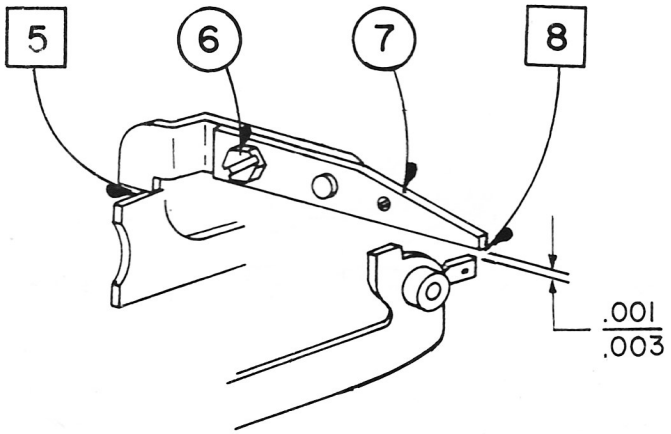

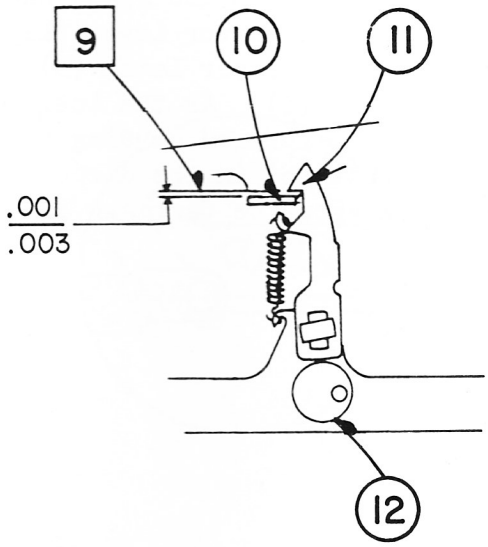

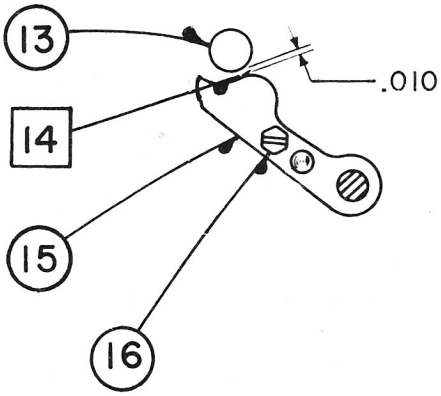

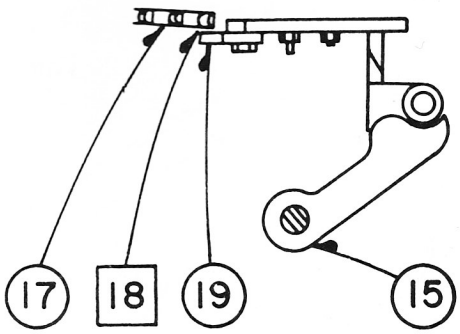

SINGLE SPACE ADJUSTMENTS

SPACE BAR FRAME:

The Space Bar (3) must be perfectly free and the top of the Space Bar must be parallel to and 5/32" below the lower bank of Key Lever Key Tops as at (4). The Space Bar Arms (2) must not interfere with adjacent Key Levers.

TO ADJUST: (a) Form the Space Bar Arms (2) to parallel the Space Bar (3) with the lower bank of Key Tops.
(b) Form the Space Bar Frame Stops (1), left and right, equally to raise or lower the Space Bar Frame.

SPACE BAR ACTION INTERMEDIATE LEVER:

There must be .001 to .003 clearance at (8) with the Space Bar Action Intermediate Lever (7) touching the Space Bar Action Lever at (5).

TO ADJUST: Turn the Intermediate Lever Eccentric Screw (6) for .001 to .003 clearance at (8).

SPACE BAR ACTION LEVER LATCH:

There must be .001 to .003 clearance between the Space Bar Action Lever Latch (11) and the Pull Link Lug (10) as at (9).

TO ADJUST: With the high side of the Eccentric (12) towards the front of the machine turn Eccentric (12) to move the Latch (11) up or down to obtain the .001 to .003 clearance at (9).

NOTE: After the above adjustments have been made, check that the Space Bar trips the Escapement for a single space operation before the Space Bar has reached a maximum downward travel of .212 or approximately 7/32".

SPACE BAR TRIP CAM:

With the Power "OFF" depress the Space Bar (3) and turn the Action Drive Shaft by hand. The Trip Cam (15) must raise the Escapement Body Roll (13) enough to lower the Fixed Dog (19) below the Escapement Wheel Teeth (17) with a slight clearance at (18).

TO ADJUST: Loosen the Screw (16) and move the Trip Cam (15) up or down as required. Tighten Screw (16). In the rest position, the Trip Cam (15) must clear the Escapement Body Roll by at least .010 at (14) and when tripped by manually turning the Action Drive Shaft, must not force the Escapement Body against the Escapement Body Stop.

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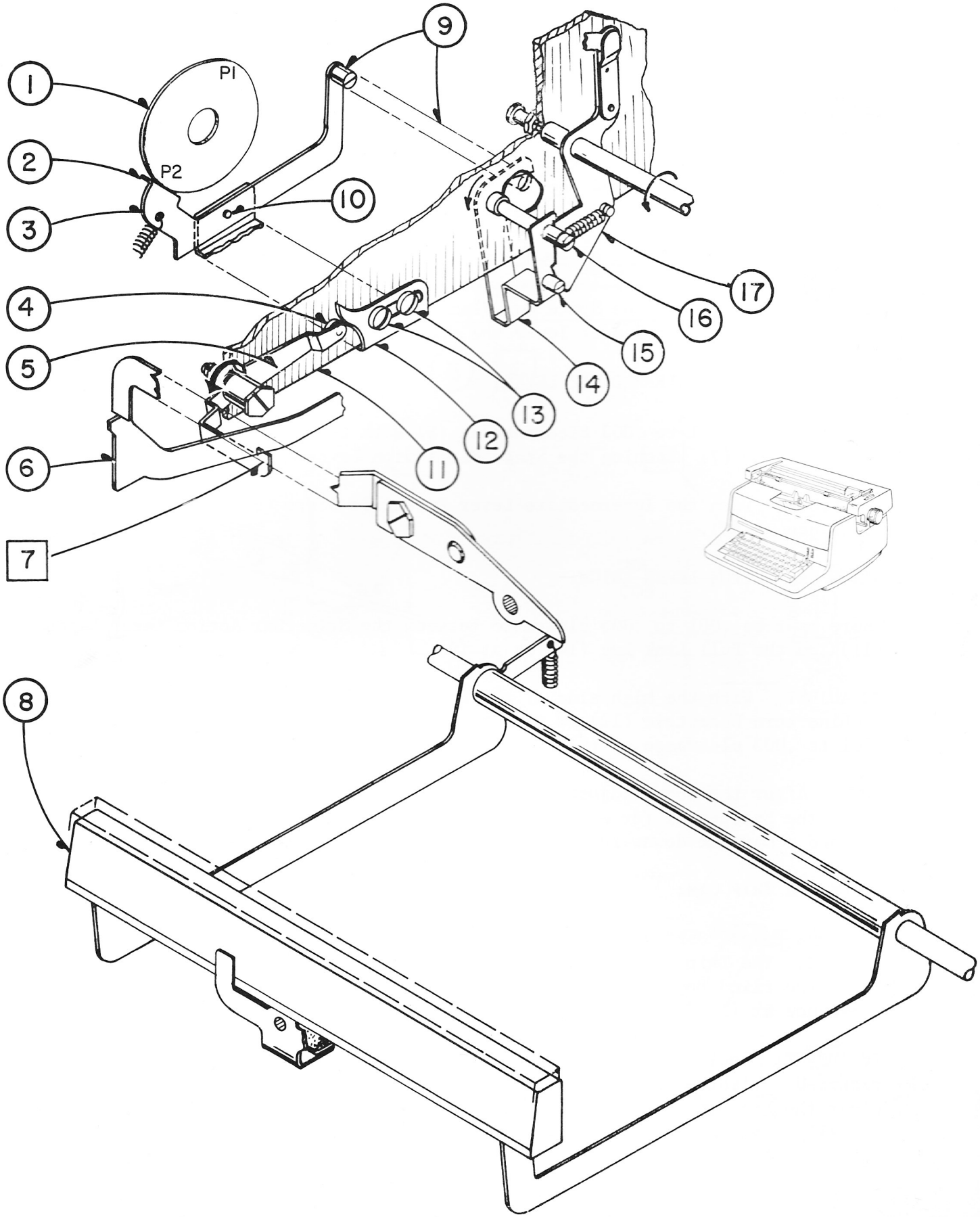

SPACE BAR MECHANISM

REPEAT SPACE OPERATION:

When the Space Bar (8) is fully depressed and held in the Repeat Space position, the Space Bar Action Lever (6) causes a single space operation to occur in the usual manner. When the Space Bar Action Lever (6) is in the repeat position, it contacts the Repeat Space Actuator Lever (5) at (7), rotating it in the direction of the arrow. As the Roller (4) rotates upward it cams the Cam Follower Bracket (12) to the rear on the two Shoulder Guide Screws (13) mounted on the left Side Plate (11). The Cam Follower (3) is attached to and pivots on the Cam Follower Bracket (12) at (10).

As the Cam Follower Bracket (12) slides to the rear, it carries the Cam Follower (3) to the rear, moving the Wing (2) into the path of the Repeat Space Cam (1). During this movement, Stud (9) will cause the Repeat Space Actuator (14) to rotate slightly, in the direction of the arrow, until the play between the Space Bar Trip Cam (not shown) and the Roller of the Escapement Body is taken up.

NOTE: The Cam Follower (3) will remain in this rearward position until the Space Bar (8) is released.

The oval shaped Repeat Space Cam (1) is attached to the Action Drive Shaft Pulley and as it revolves, the Lobes (P1 and P2) alternately contact the Wing (2) of the Cam Follower (3) causing it to oscillate at the pivot point (10). As the Eccentric Stud (9) of the Cam Follower (3) moves up and down, it rotates the Repeat Space Actuator (14) back and forth on the Shaft (16). Since the Stud (15) is in contact with the Lower Arm (17) of the Space Bar Trip Shaft, the motion is transmitted to the escapement and allows the Carriage to repeat space each time the lobes (P1 and P2) of the Cam (1) rotates the Cam Follower (3).

When the Space Bar is fully depressed for Repeat Space Operation, the lower front portion of the Space Bar Action Lever (6) enters between the Key Lever Interlock Rolls, preventing simultaneous operation of the other five Feature Keys.

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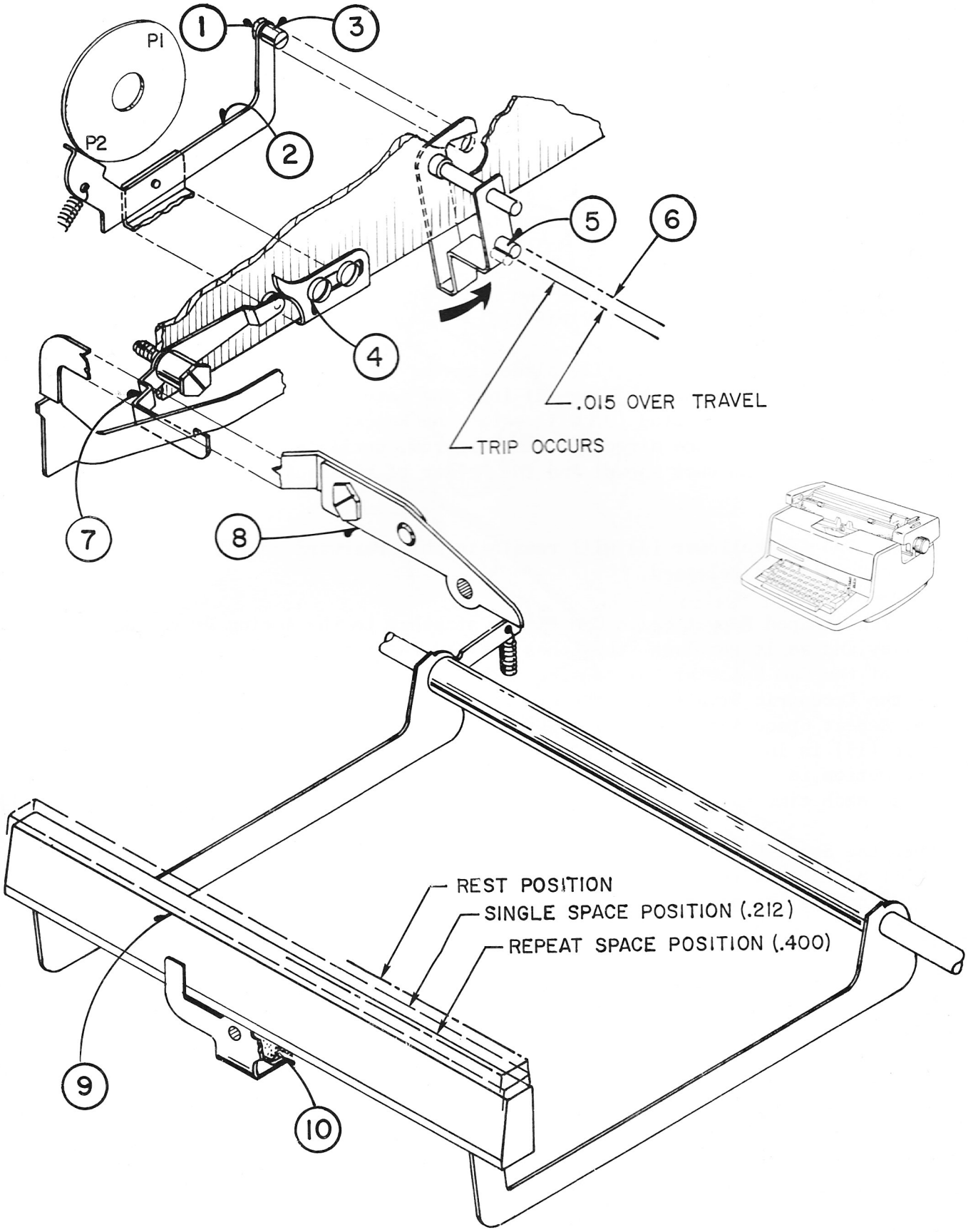

REPEAT FORWARD SPACING ADJUSTMENTS

REPEAT SPACE ACTUATOR LEVER:

The repeat spacing should occur when the Space Bar (9) has been depressed a maximum of .400 (approx.25/64") from the rest position. With the Space Bar held in this position, the Cam Follower Bracket (4) must be fully rearward as at (4).

TO ADJUST: Form the Repeat Space Actuator Lever (7) at (7) as required.

CAM FOLLOWER ECCENTRIC STUD:

There should be a minimum of .015 additional travel of the Repeat Space Actuator Stud (5) after the Escapement has tripped as at (6). When checking this adjustment, turn the Action Drive Shaft manually.

TO ADJUST: Loosen the Nut (1) and adjust the Eccentric Stud (3) on the Cam Follower (2) to attain the .015 over travel. Tighten the Nut (1). The basic starting position of the Eccentric Stud (3) is with the high side of the Eccentric forward.

SPACE BAR LIMIT STOP:

When the Space Bar (9) is depressed to the position where repeat spacing occurs, there should be an additional .010 to .030 downward travel of the Space Bar (9) before it is limited by the Space Bar Limit Stop (10).

TO ADJUST: Form the Space Bar Limit Stop (10), which is attached to the Front Housing, up or down as required.

NOTE: 1. The Space Bar (9) should not be below the opening in the Front Housing during Repeat Space operation. If this condition exists, recheck the following adjustments:

(a) Height of Space Bar (9).
(b) Space Bar Action Intermediate Lever (8).
(c) Repeat Space Actuator Lever (7).

2. The Repeat Space Mechanism has no Line Lock Device. Therefore, the Repeat Space Mechanism can continue to operate after the Carriage has reached its limit of travel.

3. The Repeat Space Mechanism operates the Feature Key Interlock which must be checked for proper adjustment.

4. Molykote mixture # 2 should be applied to all bearing and contact points of the Repeat Space Mechanism.

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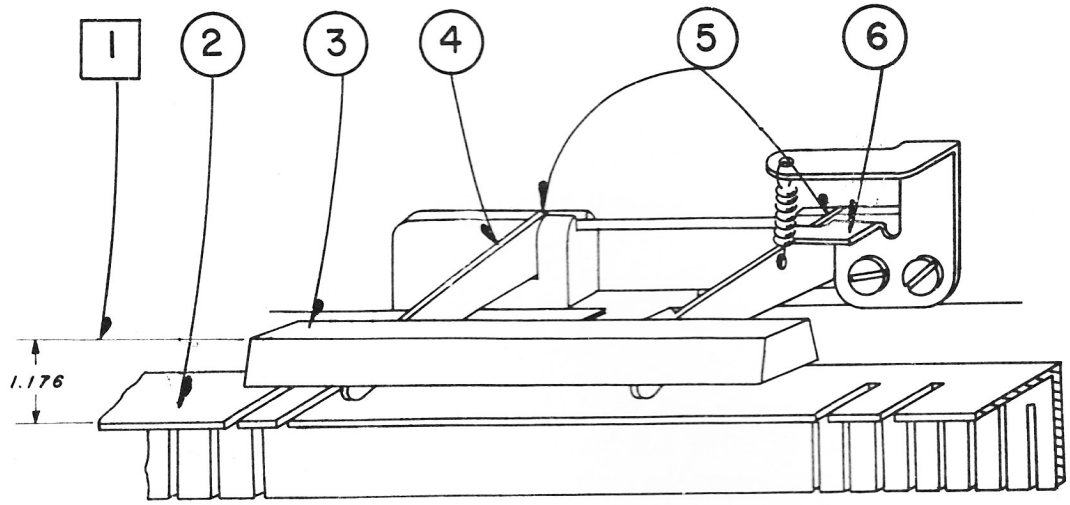
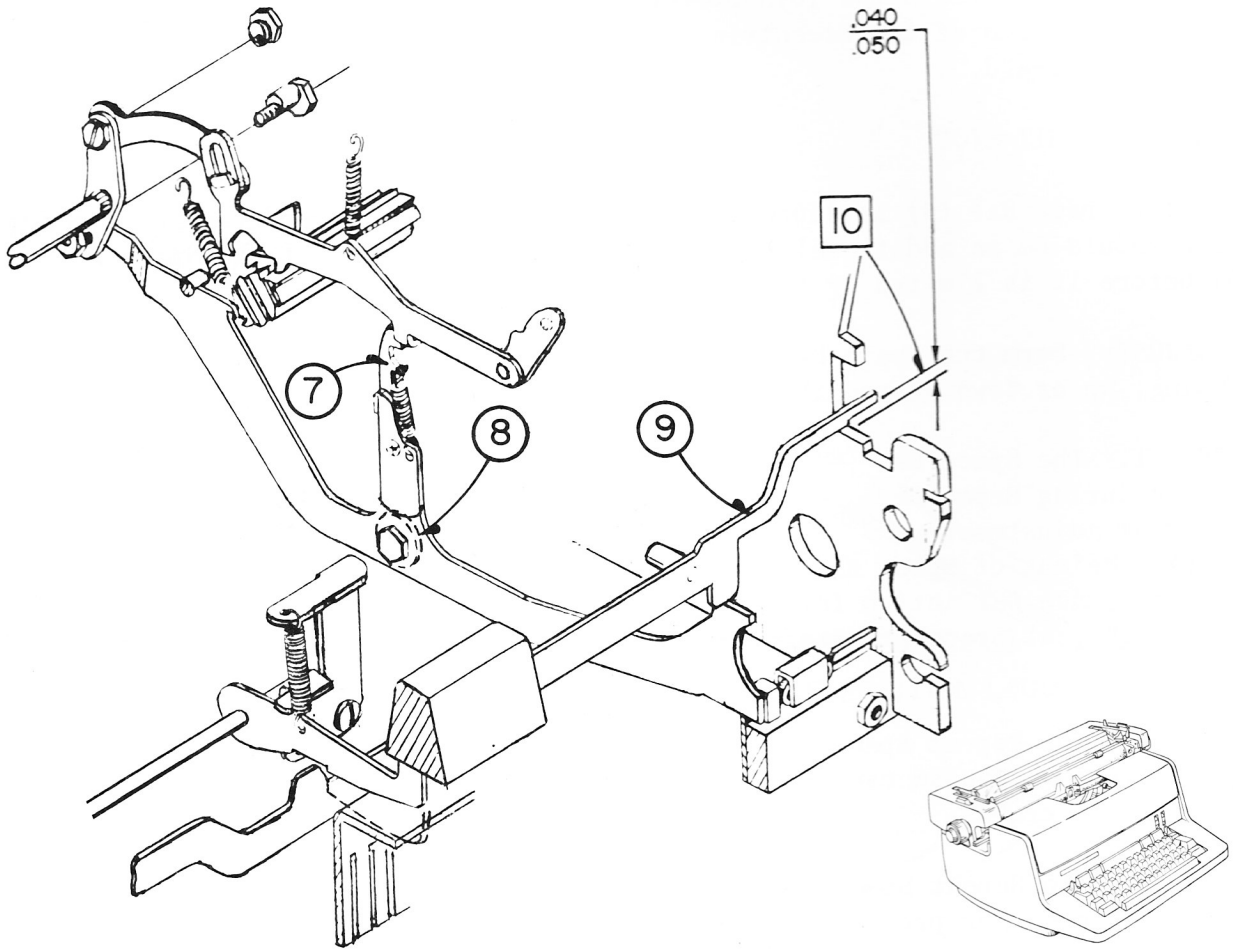




TABULATION AND REVERSE TABULATION

FOREWORD: The basic operation of the Tabulator Mechanism has not been changed from that of the Scriptor. The Reverse Tabulation Mechanism has been simplified and the Reverse Tabulation Key (RT) has been eliminated.

In order to obtain a Reverse Tabulation operation during a Carriage Return operation, simply depress the Tabulator Bar fully. Depression of the Tabulator Bar disengages the Carriage Return Mechanism and immediately engages the Tabulation Mechanism, causing the Carriage to tabulate to the nearest set Tabulator Stop.

TABULATION ADJUSTMENTS

TABULATOR BAR:

The Tabulator Bar (3) must be perfectly free in the slots of the Fulcrum Bracket (5). It must be parallel to the Key Lever Comb (2) and the top of the Tabulator Bar (3) must be 1.176" above the top of the Key Lever Comb as at (1) when in the rest position.

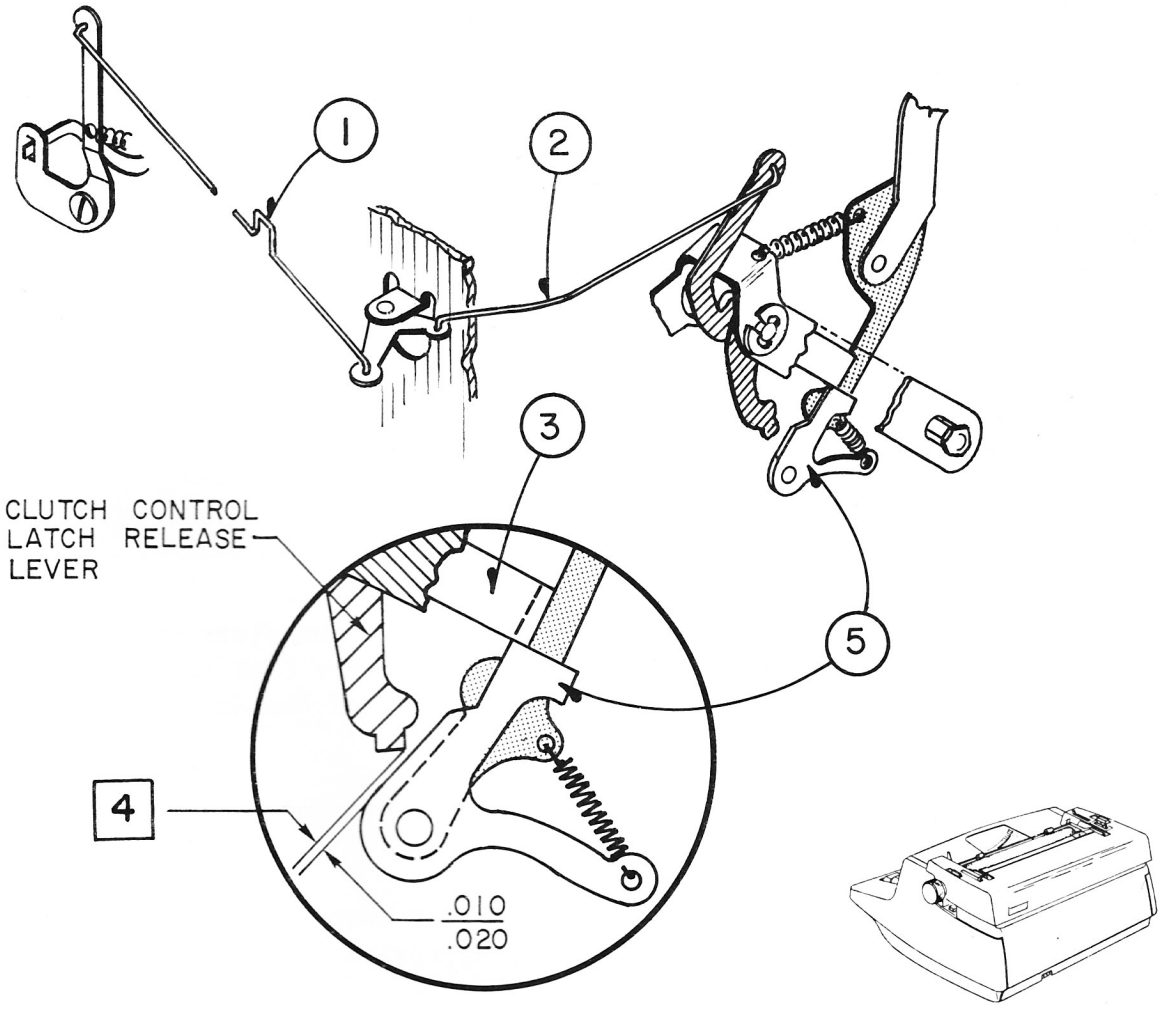
TO ADJUST: (a) Form the Tabulator Bar Arms (4) for freeness and paralleling of the Tabulator Bar (3).

(b) Form the Up-Stop, at (6) so that the top of the Tabulator Bar (3) is 1.176" (or approximately 1 and 11/64") above the Key Lever Comb (2).

TABULATOR BAR ACTION LEVER LATCH:

The Tabulator Bar Action Lever Latch (7) should be adjusted to actuate the Tabulation Mechanism when the Tabulator Bar Action Intermediate Lever (9) is .040 to .050 from the bottom of the slot in the right Side Plate as at (10).

TO ADJUST: Turn the Latch Eccentric (8), as required.



REVERSE TABULATION ADJUSTMENTS

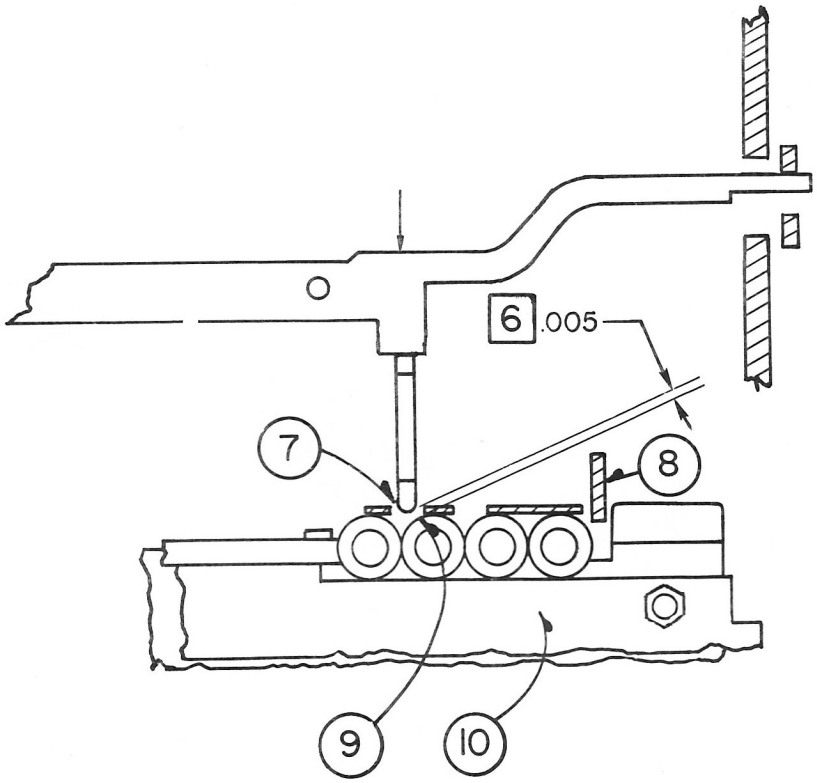
CLUTCH CONTROL LATCH RELEASE LEVER:

With the Cam Lever Latch Arm (3) latched on the Carriage Return Clutch Control Cam Lever Latch Stop (5), there must be .010 to .020 clearance as at (4).

TO ADJUST: Increase or decrease the angle of the Link (2) by forming it at (2). And, if necessary, open or close the "loop" of the Reverse Tabulator Actuating Link (1).

NOTE: To check if the adjustment of the Clutch Control Latch Release Lever responds properly, perform the following test:

With the Motor turned off, manually engage the Carriage Return mechanism. Slowly depress the Tabulator Bar while observing the forward end of the Tabulator Bar Action Lever (7). The Carriage Return Key Lever (8) must disengage from the Down Stop Bar (10) when the Tabulator Bar Action Lever (7) reaches a maximum clearance of .005 from the Interlock Roll (9) as at (6).



(R.T.) TEST: Tabulate to the Right Margin Stop. Depress the Carriage Return Key and quickly depress the Tabulator Bar. The Carriage Return must disengage easily and tabulation must immediately start. Repeat procedure several times with two or three Tabulator Stops set.

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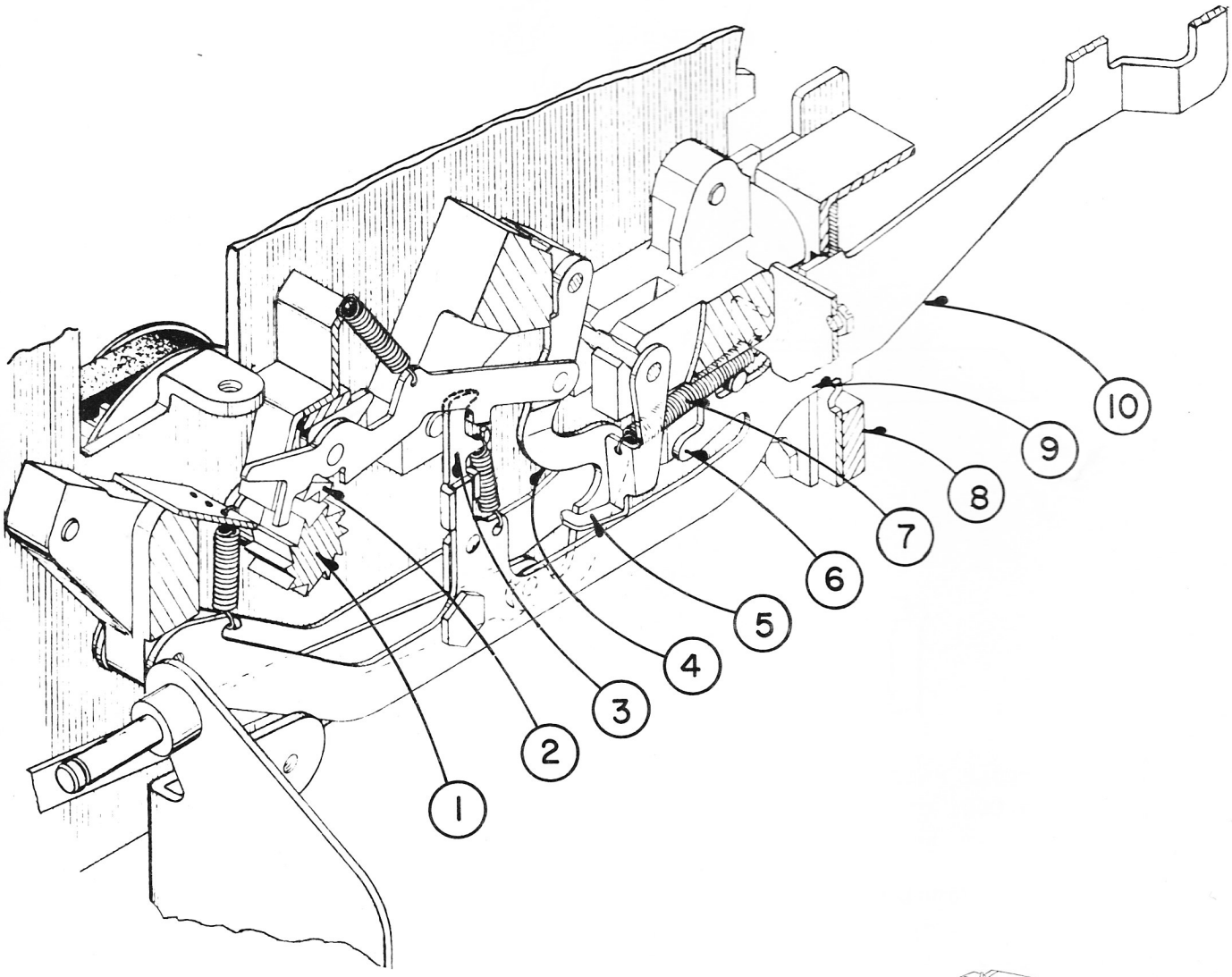

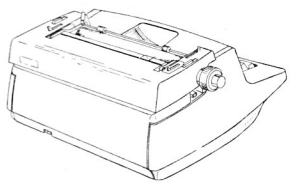

CARRIAGE RETURN MECHANISM

FOREWORD: The basic operation of the Carriage Return mechanism has not been changed from that of the Scriptor. The left Carriage Return Key has been eliminated and the command mechanism has been simplified by combining the former Carriage Return Key Lever with the Carriage Return Interlock Lever. There is one Carriage Return Key Lever (10), located at the right side of the Keyboard.

COMMAND: When the Carriage Return Key Lever (10) is depressed, its extension (9) enters into the Key Lever Down Stop Bar (8).

The Latch (3) lowers the Carriage Return Push Link Dog (2) into engagement with the Action Drive Shaft (1). As the Push Link (4) is driven to the front, it releases the Carriage Return Interlock Latch (5). The Interlock Lever Latch (5) is pulled by the Spring (7) over the Step (6) on the Carriage Return Key Lever (10) thus retaining the Carriage Return Key Lever (10) in the down position. This is necessary in order to maintain the Carriage Return Key Lever (10) in the Key Lever Down Stop Bar (8), thus preventing accidental engagement during a carriage return operation of either the Tabulator Set Key, the Back Space Key, the Half Space Key or the Space Bar in repeat position.

The rest of the Carriage Return linkage operates in the same way as in the Scriptor.

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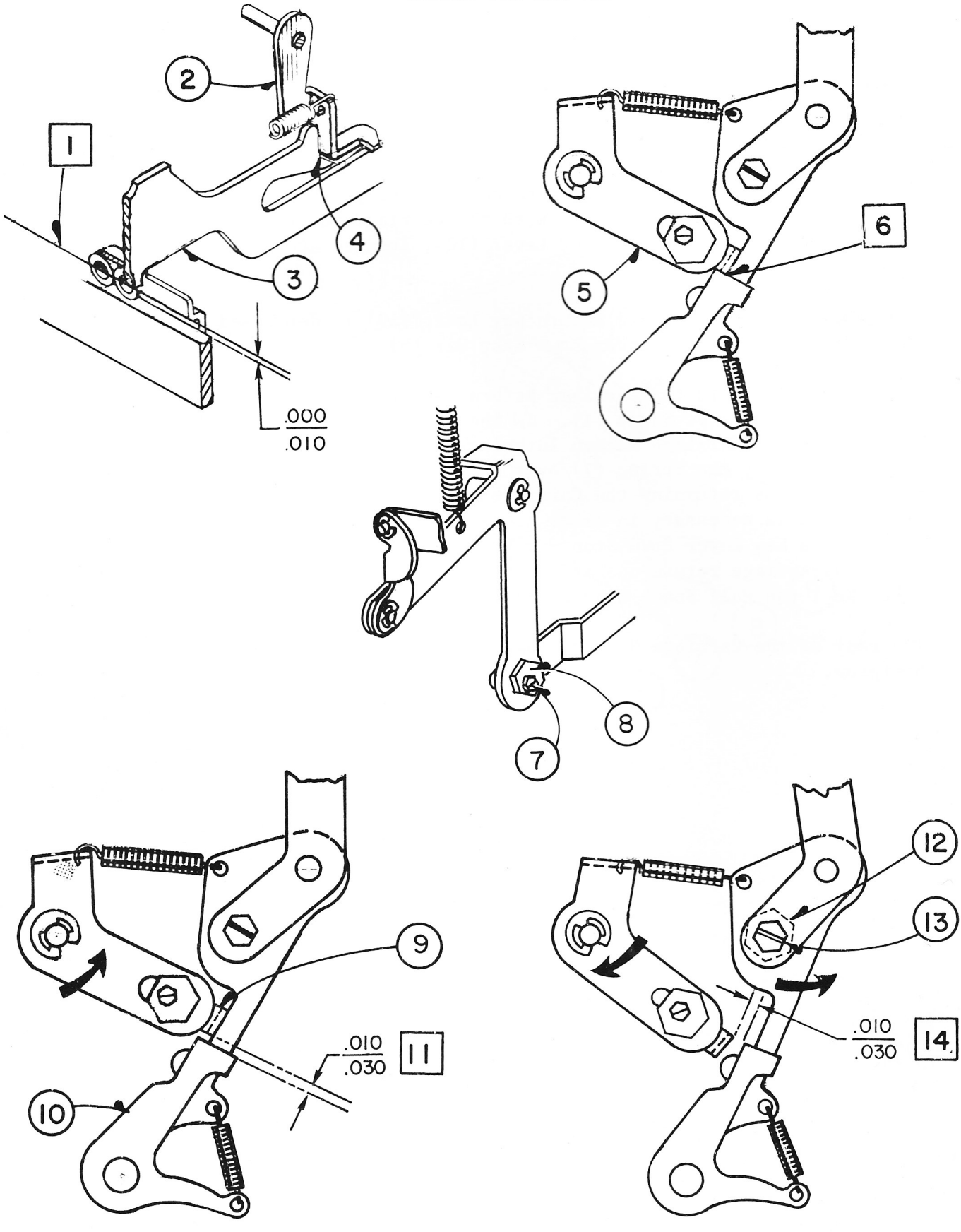

CARRIAGE RETURN ADJUSTMENTS

CARRIAGE RETURN KEY LEVER: (Activated Position)

With the Motor Switch in the "OFF" position, depress and hold the Carriage Return Key. Turn the Motor Drive Pulley slowly. The Interlock Latch (2) must move over the Carriage Return Key Lever Extension (4) as at (4).

With the Cam Lever Latch Arm (5) latched at (6), and with the Carriage Return Key released, the Interlock Latch (2) must hold the bottom edge (3) of the Carriage Return Key Lever (3) from .000 to .010 below the center line of the Interlock Roll as at (1).

TO ADJUST: Form the Carriage Return Key Lever Extension (4) up or down as required.

CARRIAGE RETURN CLUTCH INTERMEDIATE ARM:

With the Motor Switch in the "OFF" position, depress and hold the Carriage Return Key while slowly turning the Motor Drive Pulley. The Cam Lever Latch Arm (9) must rise .010 to .030 above the Cam Lever Latch Stop (10) as at (11).

TO ADJUST: Loosen Screw (7) and adjust Eccentric (8) as required. Tighten Screw (7).

CARRIAGE RETURN CLUTCH CONTROL CAM LEVER LATCH STOP

When the Carriage is held in a "Banked" position, there must be a clearance of .010 to .030 at (14).

TO ADJUST: Loosen the Screw (13) and adjust the Eccentric (12) as required. Tighten the Screw (13).

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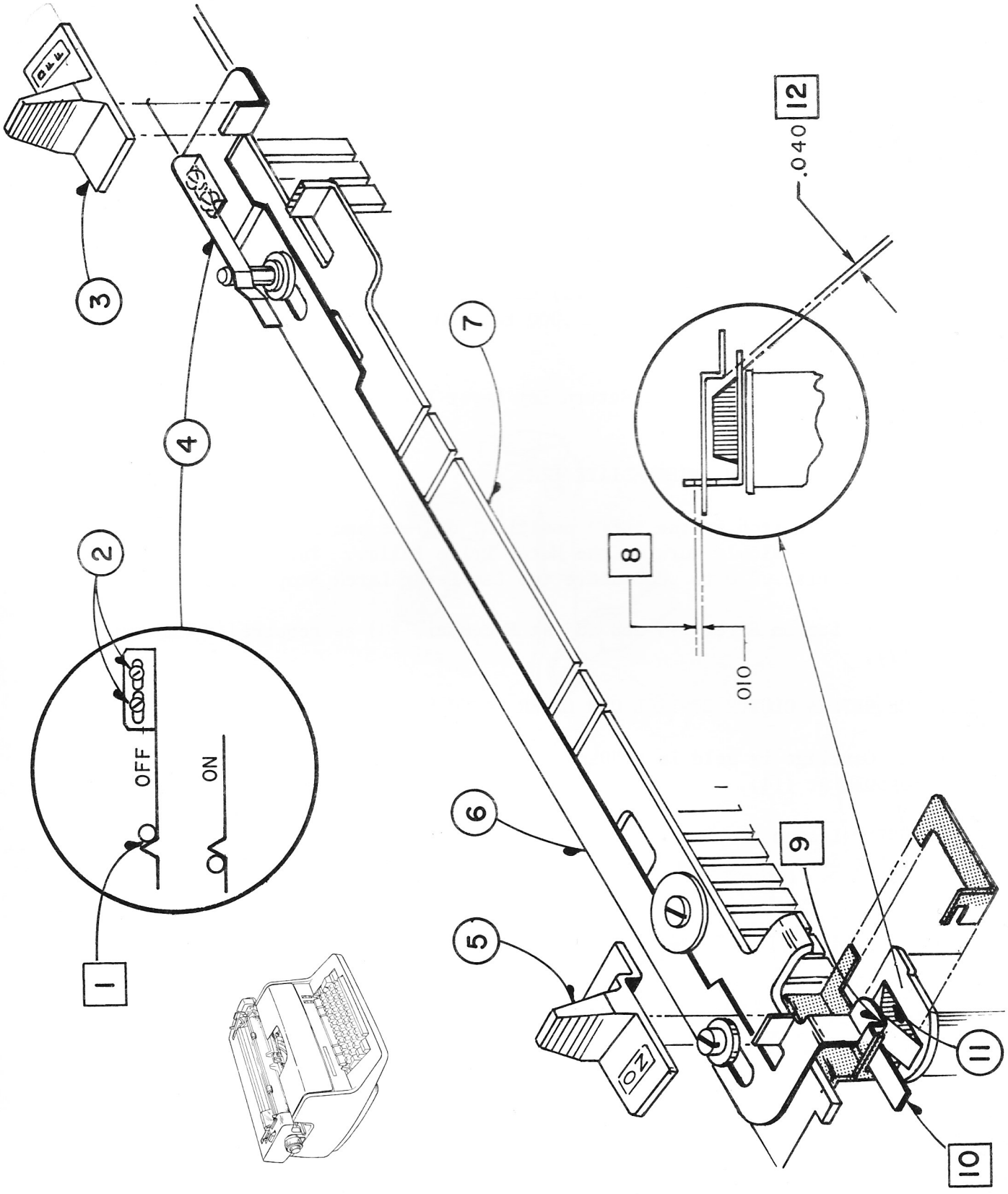

MOTOR SWITCH

FOREWORD: The Motor Switch "ON" Button (5) is located in the upper left corner of the Keyboard and the "OFF" Button (3) is located in the upper right corner of the Keyboard. Both the "ON" and the "OFF" Buttons are attached to the Switch Extension Slide (6) which is mounted on top of the Key Lever Comb (7).

When the Switch Extension Slide (6) is to the left (OFF Position), the Switch Actuator (11) is held down at (9), thus breaking the electrical circuit to the Motor.

When the Switch Extension Slide (6) is to the right (ON Position), the Switch Actuator (11) is free to rise, thus completing the electrical circuit to the Motor (see lower insert)

The Switch Extension Slide (6) is positively maintained in either the "ON" or "OFF" position by means of a Detent (4) located on the right end of the Switch Extension Slide (6).

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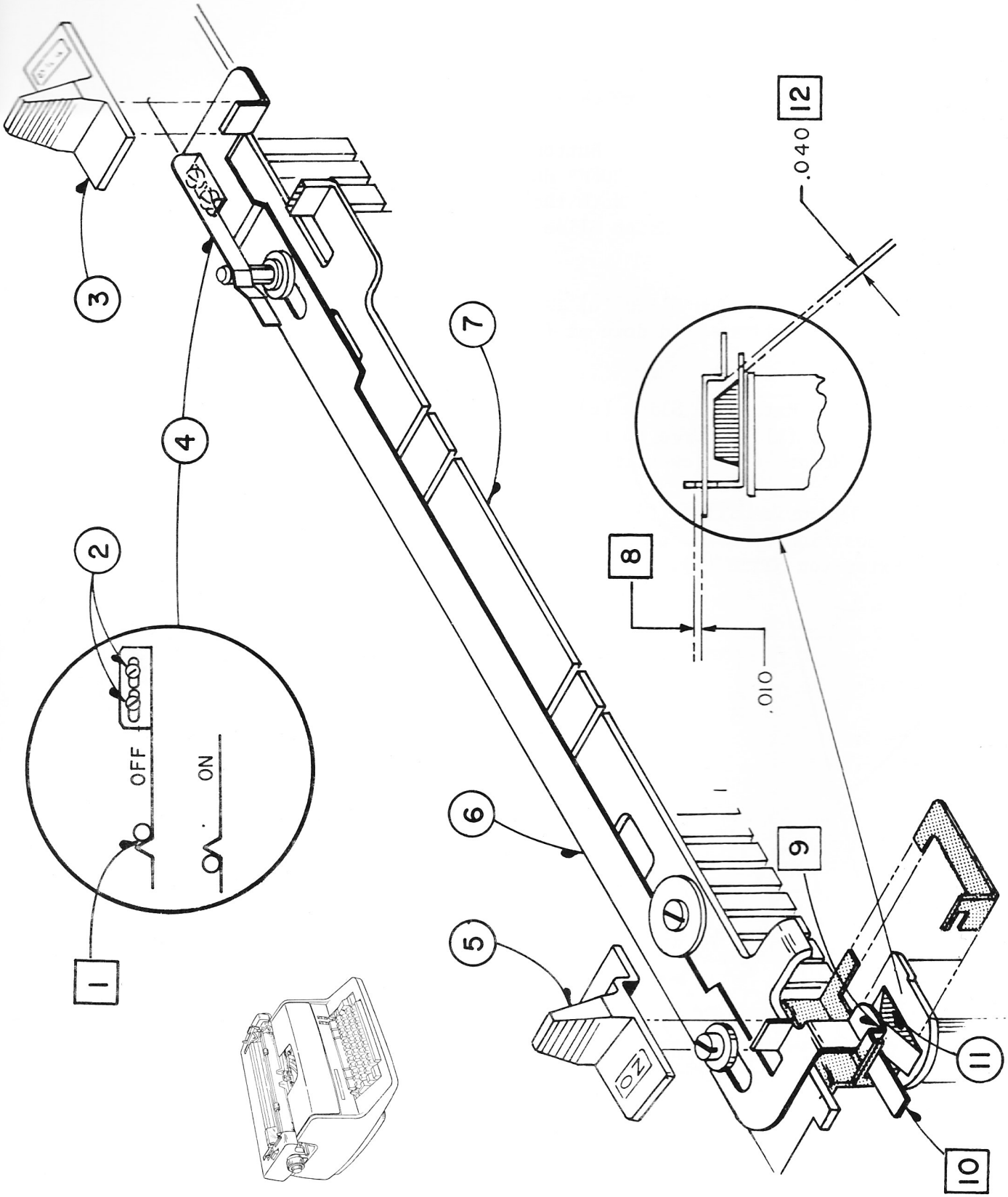


MOTOR SWITCH ADJUSTMENTS

SWITCH EXTENSION SLIDE:

The Switch Buttons (5) and (3) must safely clear the Front Housing, and the Switch Extension Slide (6) must slide freely when actuated by either the "ON" or "OFF" Switch Button.

TO ADJUST: Form the Switch Button Key Stems of the Switch Extension Slide (6) for clearance to Front Housing.

Lubricate all sliding surfaces of the Switch Extension Slide with Molykote, and form slightly to relieve any binding condition.

SWITCH EXTENSION SLIDE DETENT:

With the Switch Extension Slide (6) in the "ON" position, the Detent (4) must hold the Switch Extension Slide (6) in position without end play. A minimum clearance of .040 should exist at (12) and a maximum clearance of .010 should exist at (8).

TO ADJUST: With the Switch Extension Slide (6) in the "ON" position, loosen the two Screws (2) and adjust the Detent (4) to obtain the minimum clearance of .040 at (12).

Form the end of the Switch Extension Slide, up or down at (10) to obtain a maximum clearance of .010 at (8).

NOTE: With the Switch Extension Slide (6) in the "OFF" position, a minimum amount of end play is allowable at (1).

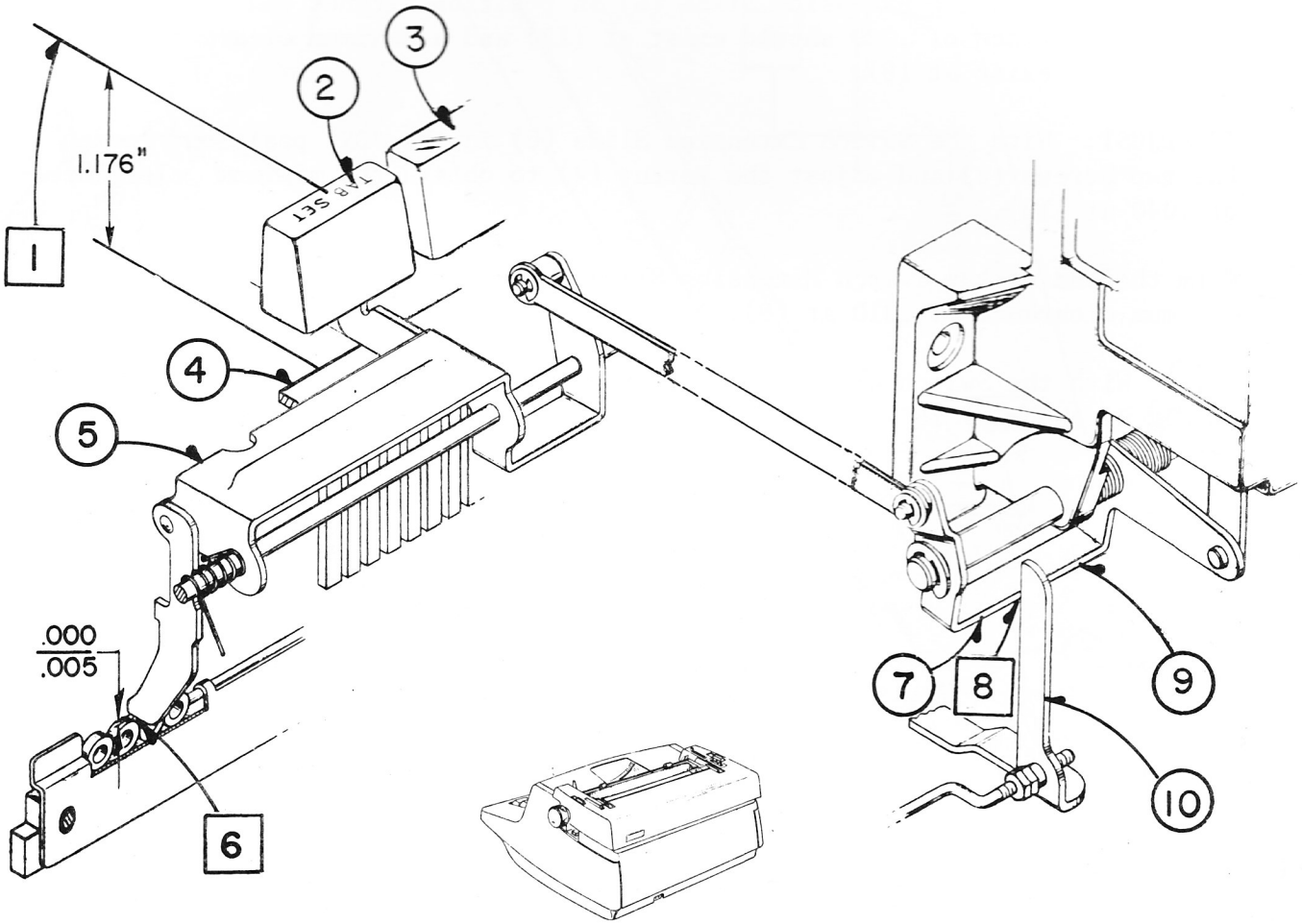
TABULATOR SET KEY:

At rest position the height of the Tabulator Set Key (2) should be 1.176" (1 and 11/64") above the top of Key Lever Comb (4), as at (1), and even with the top of the Tabulator Bar (3).

TO ADJUST: Hold the Tabulator Set Bail (9) rigid with a Large Twister at (9). With another Large Twister at (7), form the Tabulator Set Bail as required to obtain the proper height of the Tabulator Set Key (2).

NOTE: After the above adjustment has been made, check for a clearance of .000 to .005 at (6). If necessary, form the right end of the Bail (5), up or down, at (5).

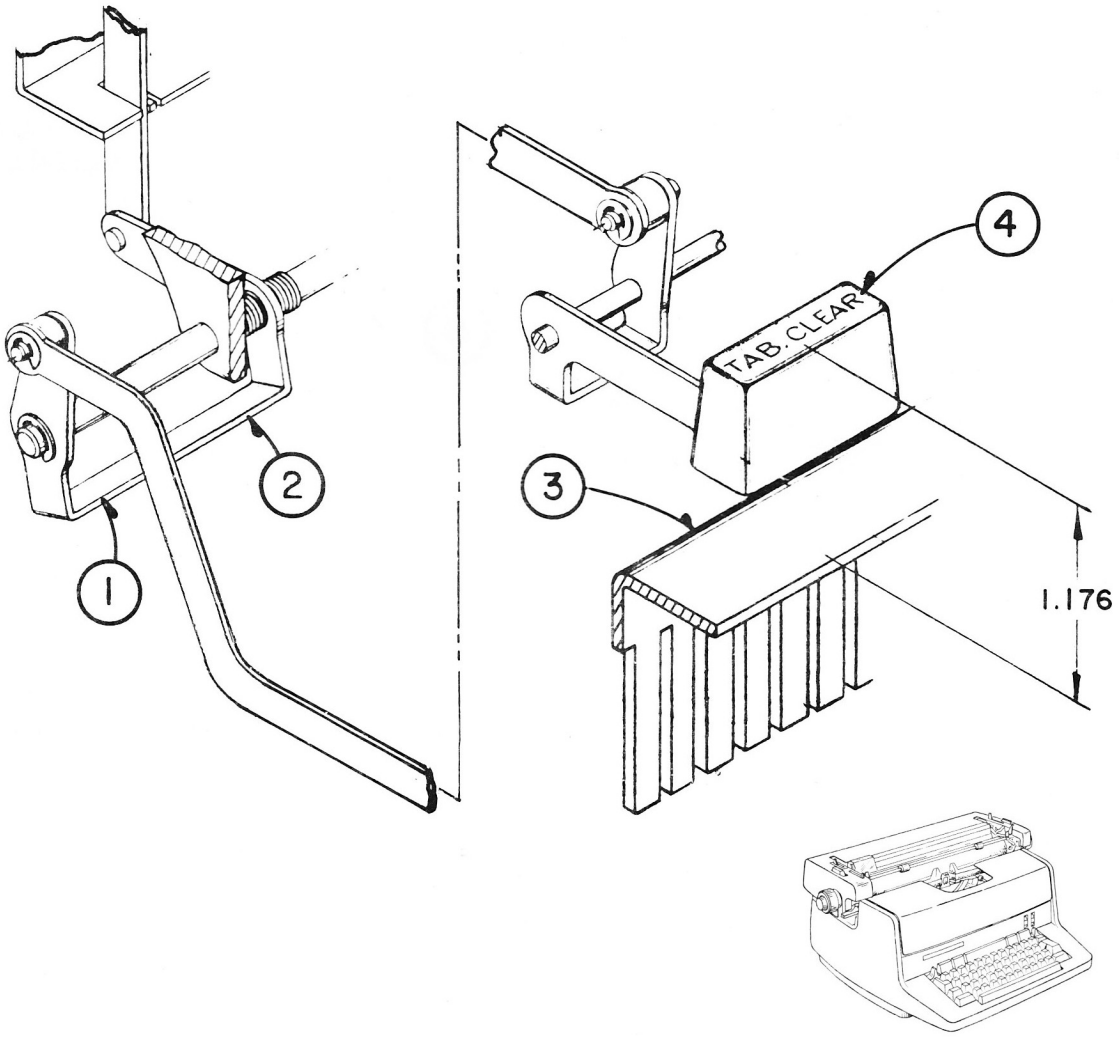
Also, check for a clearance of 1/32" at (8). Form the Arm (10) back or forth as required.



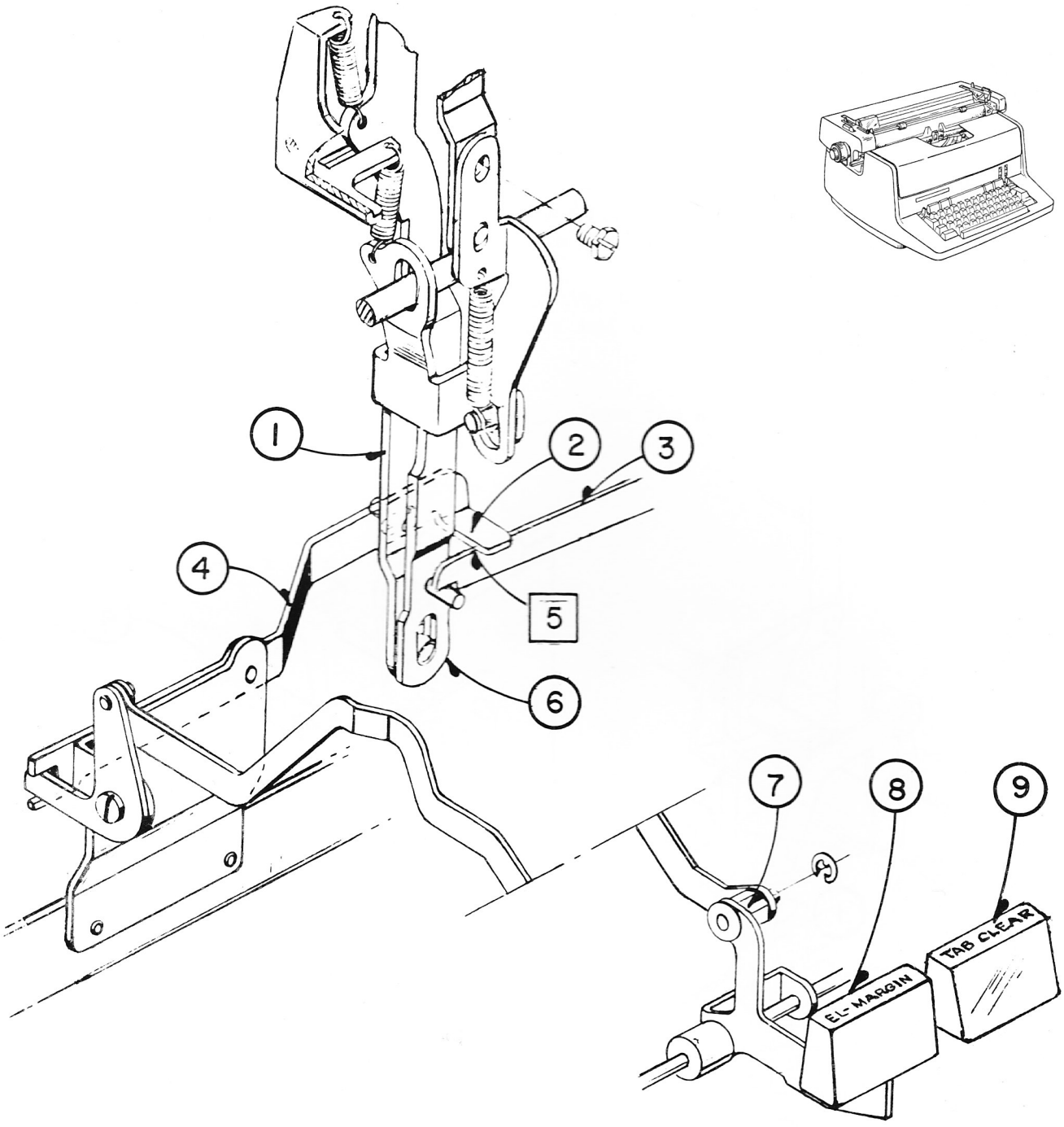
TABULATOR CLEAR KEY:

At rest position the height of the Tabulator Clear Key (4) should be 1.176" (1 and 11/64") above the top of the Key Lever Comb (3), and even with the top of the Tabulator Bar.

TO ADJUST: Hold the Tabulator Clear Bail (2) rigid with a Large Twister at (2). With another Large Twister at (1), form the Tabulator Clear Bail as required to attain the proper height of the Tabulator Clear Key (4).



UNDERWOOD ELECTRIC TYPEWRITERS
MODELS 700 and 702



ELECTRIC MARGIN KEY LEVER:

The height of the Electric Margin Key Top (8) should be level with the top of the Tabulator Clear Key (9), plus or minus .010.

TO ADJUST: Turn the friction Eccentric (7) as required.

NOTE: All linkage to the Margin Stop Control Slide Lower Extension (1) must operate freely.

MARGIN STOP CONTROL SLIDE OPERATING LEVER:

With the Electric Margin Key (8) held fully depressed, the Margin Stop Control Slide Operating Lever (4) must lower the Margin Release Slide (6) to clear the bottom of the Margin Stops by at least .010.

TO ADJUST: Form the Extension (2) up or down as required.

NOTE: With the Electric Margin Key (8) fully depressed, there must be .003 to .006 additional downward travel of the Margin Release Intermediate Lever (3) at (5).

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MARGIN RELEASE KEY LEVER:

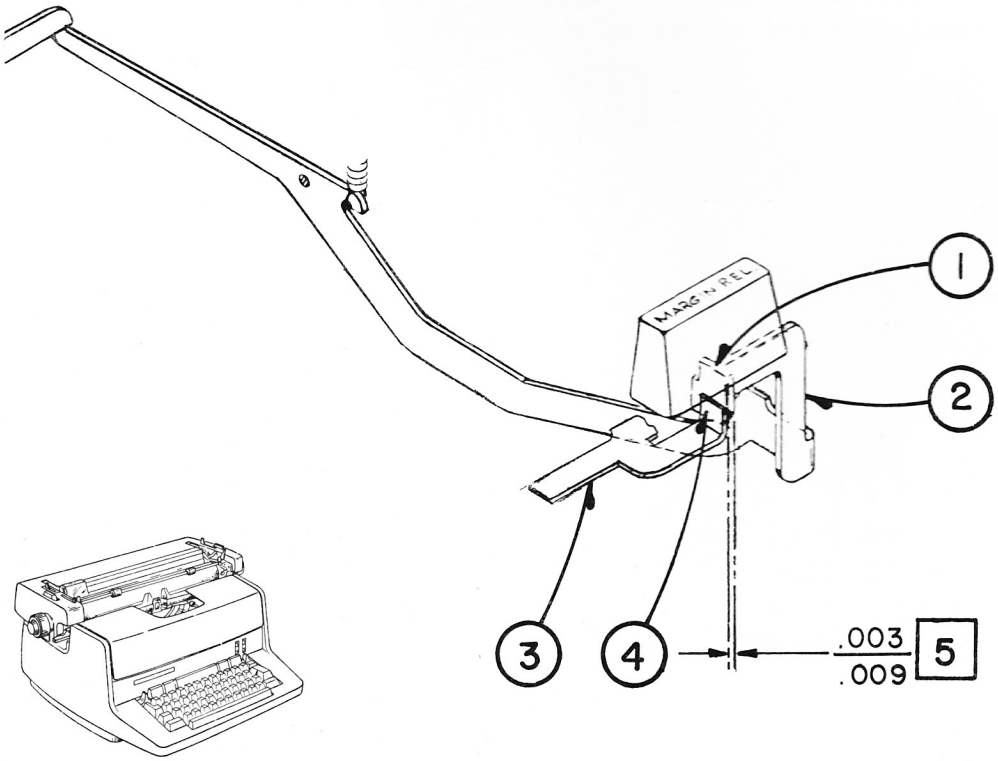
The Margin Release Key Lever (2) must operate freely in the Fulcrum Bracket and in the slot of the Key Lever Comb.

TO ADJUST: Form the Margin Release Key Lever (2) as required for free operation.

NOTE: With the Margin Release Key Lever (2) at rest position, its extension (1) should clear the Vertical Wing (4) of the Key Lever Comb (3) with a clearance of .003 to .009 at (5).

TO ADJUST: Form the Vertical Wing (4) as required.

Lubricate all friction points with Molykote.



ALIGNING SCALES:

FOREWORD: The Aligning Scales, left (4) and right (9) are made of clear plastic, and each Aligning Scale is attached to its respective Bracket (6) and (8).

The outer ends of the Aligning Scale Brackets are attached to the Ribbon Spool Brackets at (2) and (11). The inner ends of the Aligning Scale Brackets are fastened to the Fixed Rail.

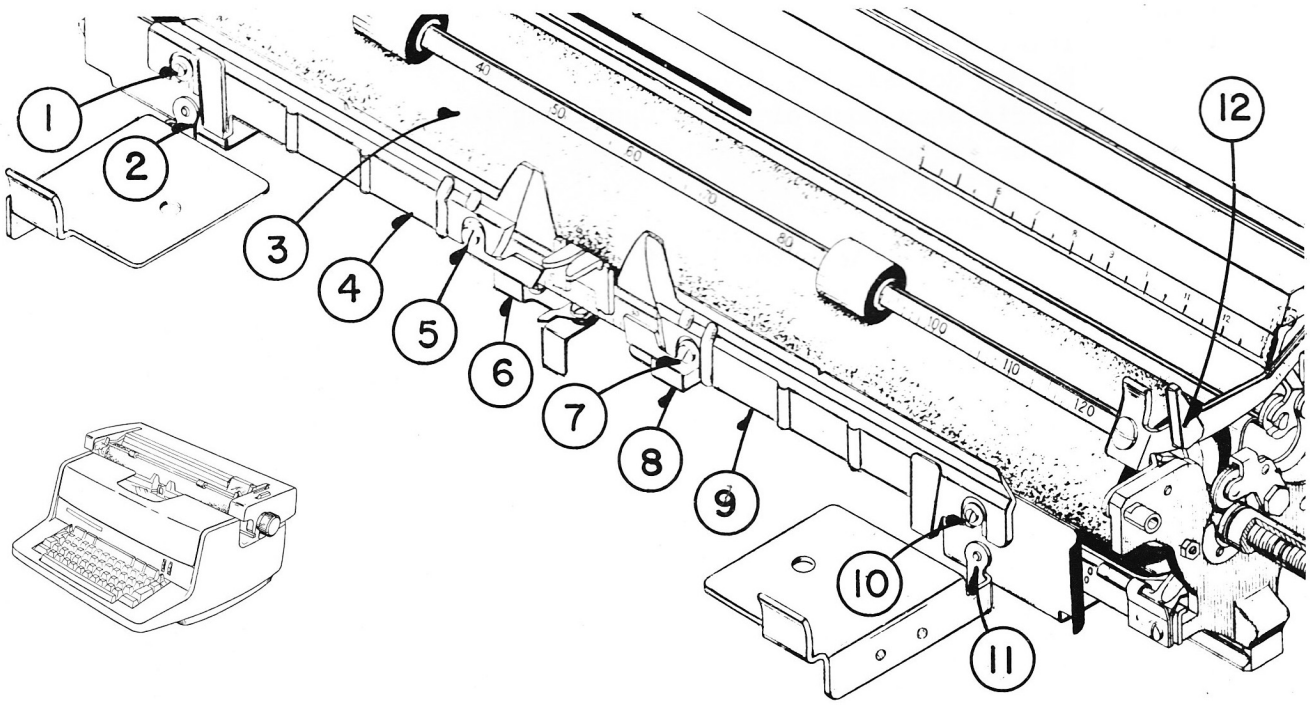
ADJUSTMENTS

The Aligning Scales (4) and (9), must clear the Platen (3) by .032, with the Platen Positioning Lever (12) set in position "A".

TO ADJUST: Form the inner portion of Aligning Scale Brackets, at (6) and (8), and the Ribbon Spool Bracket Extensions (2) and (11), as required.

The Aligning Scales (4) and (9), must be positioned parallel to and .005 below the "line of write". The Aligning Scales graduations must align centrally to all characters.

TO ADJUST: Type a "line of write", using the characters "m" and "v" alternately. Loosen the Screws (1), (5), (7) and (10). Position the Aligning Scales to the left or right and up or down, to meet the above requirements. Tighten the Screws.



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